THE OIL WEEKLY

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The Oil Man's Calendar

JAN.	
10	**American Petroleum Institute, Division of Production, Chamber of Commerce auditorium, Houston Chapter, Houston, Texas.**
15	**Illinois-Indiana Petroleum Association, Woodworth Hotel, Robinson, Illinois.**
24	**Governor Marland's Petroleum Conservation Conference of Oil State Governors, Hot Springs, Ark.**
FEB.	
14–15	**Kansas Oil Men's Association, Annual Convention and Exposition, Hotel Broadview, Wichita.**
14–18	**American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.**
17–18	**Mid-Continent District, American Petroleum Institute, Division of Production, Herring Hotel, Amarillo, Texas.**
MAR.	
16–18	**Annual Meeting, American Association of Petroleum Geologists, Roosevelt Hotel, New Orleans, La.**
24–25	**Southwestern District, A.P.I. Division of Production, Spring Meeting, Blackstone Hotel, Fort Worth, Tex.**
APR.	
13–15	**Petroleum Industry Electrical Association, Rice Hotel, Houston, Texas**
28–29	**American Petroleum Institute, Eastern District, Division of Production, William Penn Hotel, Pittsburgh, Pennsylvania.**
MAY	
11–13	**Natural Gasoline Association of America, Hotel Tulsa, Tulsa.**
12–14	**National Oil Scouts Association of America, Tulsa, Oklahoma.**
14–21	**International Petroleum Exposition, Tulsa, Oklahoma.**
23–25	**American Petroleum Institute, Eighth Mid-Year Meeting, Wichita, Kansas.**
	American Gas Association, Natural Gas Department, New Orleans, La.

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LOOKING AHEAD

WITH THE EDITOR

K-M-A Comes Back . . . New Deep Pay Spreads Over 30,000 Acres, and Not Defined Yet . . .

IT was there all the time. But they just couldn't reach it. Back in 1919 the old K-M-A field bloomed one morning and died that night. It afforded only shallow stripper production instead of expected gushers.

For 12 years, until 1931, development continued on a stripper basis, with $2000 as the average cost to drill and put a well on the pump. Then one concern went down to the Ellenberger and plugged back to a Strawn series sand at 3675-3742 feet to get a well that flowed by heads. It later pumped 109 barrels in 9 hours.

Still the deep pay looked like a dangerous investment. Operators rocked along for 6 years, largely satisfied with stripper stuff but drilling an occasional deep well strictly within the shallow limits.

Then a newcomer who wasn't hampered by too much local knowledge spotted a location more than a mile out in the wilderness. "He wasn't wildcatting. Just throwing his money away," some said.

But the newcomer cashed in when he found at 3705-52 feet a true sand instead of a combination lime and sand. November 15, 1937, his well went on production for 2068 barrels in 12 hours, record production for the field. Forty-five days later the small stripper field had changed to a maior deep reserve embracing 25,000 acres sure of development, 71 flowing and 15 pumping wells, 60 sections of land proven, 100 more under test, and a lease play involving more than 200 square miles.

That, briefly, is the story proving "they do come back." It deals with K-M-A and the Strawn play in North Texas. Grady Triplett tells all about it in a complete, profusely illustrated article which will appear in the January 17 issue of The OIL WEEKLY.

The changing panorama

DESPITE numerous hopeful year-end statements, the gloom attending the business slump hangs on, and prospects for both the general situation and the oil picture remain uncertain at best.

Although the stock market is looked upon with doubt by some as a business barometer, its continued reactionary movement last week caused further anxiety.

Numerous other business indicators also have continued uninspiring.

Unemployment Becoming Serious

Growing unemployment is particularly disconcerting. An official of the Works Progress Administration has estimated that 2,000,000 persons had become unemployed since September 1 and that another 1,000,000 might become jobless by the end of February.

The labor department at Washington reported that industrial employment declined 5.8 percent in November, as 570,000 workers lost jobs.

The W.P.A. has announced plans to increase its rolls by adding about 350,000 needy unemployed.

In announcing that General Motors Corporation, effective January 1, would reduce its number of employees in the United States by 30,000, William S. Knudsen, head of the concern, explained that "the recession in business makes a readjustment of the working force necessary." The company plans to operate its plants three days, or 24 hours, a week.

It was further explained that reduction of output was necessary to prevent further unwarranted building up of inventories.

Questioning of the automobile manufacturing company official indicated that the need for reducing the number of employees was based on definitely lowered purchasing power and resultant smaller demand for both used and new cars.

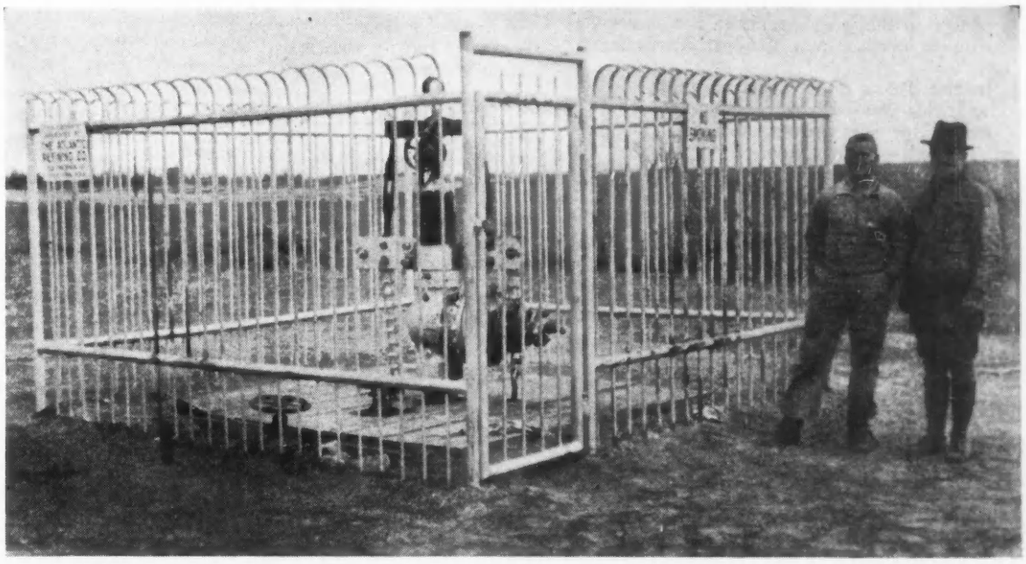
The General Motors head expressed hope that the slump would prove temporary and that spring would bring improvement. He also expressed the opinion that the let-down in business resulted largely from a too-rapid rise in price levels last spring, which pushed price tags outside the reach of buyers.

Various Industries Retarded

The automobile manufacturing companies now are experiencing the loss of business that began to plague the steel-making companies some months ago. The steel mills now are operating around 25 percent of capacity, in contrast with over 90 percent last spring. Consequently, the unemployment situation in the steel centers naturally has become acute. The loss of employment in those areas has, of course, reacted adversely against other industries, lowering demand and employment in them. The spreading of the business inertia and unemployment by now has involved various industries in addition to the steel and motor industries. And the industrial outlook remains obscure, despite much lingering hopefulness.

Meanwhile, the outlook for farm purchasing power in 1938 is similarly disconcerting. In view of the sharply reduced prices for cotton, corn, wheat, cattle, hogs, and other commodities, the possibilities for

Chained and hog-tied behind a heavy protecting fence is one of Kansas' largest natural gas wells, and by far the largest in Rice County. The well, Atlantic Refining Company's Pulliam 1, C S½ N½ NE¼ 35-19s-8w, was drilled on a farmout to Simpson and Noble and was completed for an estimated 74,000,000 cubic feet of gas from Chat at 3385 feet, during August, last. A Shell Petroleum Corporation wildcat test on the same geologic "high" ran into a fishing job after developing the heavy gas volume and was finally abandoned. Some time after completion the production of gas from the well began to show increasing gasoline content, with the result that a large separator station has been installed to handle production from the well. Initial production was determined as being about 950 BTU, although this figure has raised considerably since completion.



selling to people of the agricultural districts in the coming year naturally are circumscribed.

Oil Outlook Uncertain

Against such a general background, it is difficult to paint the oil industry outlook in definitely bright colors, despite various advantages that the industry holds.

The recent major depression demonstrated that hardly an industry could escape the deflationary influences, and that the petroleum industry could not prosper while other lines languished.

Similarly, the outlook for the oil industry now seems to be tied inseparably to the general situation; and the oil outlook consequently appears destined to remain uncertain as long as the general business picture is so clouded.

Oil Markets Disturbed

Furthermore, despite its characteristic depression-resisting qualities, the petroleum industry already has begun to feel the downward pull of the general situation.

All the industry's powers of resistance have not been enough to sustain gasoline prices, in the face of only moderately declining demand. The gasoline prices at refineries still have not stopped in their descent that began about the end of September, although there has been some braking of the downward movement in recent weeks.

Furthermore, the weak gasoline market has been dragging heavily on the crude market, threatening to pull the crude postings down proportionately.

Crude Prices Resistant

So far, the crude prices have been holding. But several recent developments cast doubt on the ability of the crude market to continue to hold its ground. A drastic cut in postings in two Michigan fields last week was a sign of weakness. And to some extent disappointing is the program of state allowables prescribed for January by the leading producing states. Four of the six leading producing states in January will have allowables larger than the Bureau of Mines estimates of market demand. The excesses are comparatively small, and despite them, crude stocks probably will not show any material net change in January. But the January crude control will be definitely less strict than in the past several months. And without the exceptionally firm control of the recent months, the industry probably will experience added difficulty in maintaining stable crude markets and prices.

Trial Proceeds

The trial of the oil companies at Madison on the charges of anti-trust law violation was featured last week by refusal of the court to declare a mistrial. Still on trial are 16 major oil companies and 37 individuals.

Drilling

SOUTH TEXAS recorded a new Frio pool 4 miles east of Calallen, Nueces County; fairly well divided acreage may create considerable drilling. Another wildcat washing for completion in Victoria County, near Telferner indicates a field. The deepest field in the district may result from testing sands at 8500 and 9000 feet in a well 2½ miles southwest of McAllen in Hidalgo County. The sixth sand for North Sweden field was found at 4510-50 feet, and a well is completing in the Cole sand to open a new field for Webb County.

In South Louisiana a new field was discovered by the third deepest commercial producer in the world; another test is preparing to open a new field at Timbalier Bay.

In the Texas Gulf Coast another Miocene field was discovered in Jefferson County. One was proven at Cedar Bayou in Chambers County, too.

A prolific producer from a northwest outpost at K-M-A, North Texas, stimulated demand for expensive leases, although east and southeast outposts were listed as doubtful producers.

In West Texas indications are the two-mile gap between flowing producers in the Slaughter pool in Hockley County may be closed by a productive well. Encountering Ordovician at a normal depth 2¾ miles northeast of Sand Hills, Crane County, production, enhanced the deep oil and gas possibilities of the area.

East Texas reported a possible new field in Woodbine sand in Anderson County.

Colorado's most prominent wildcat on Wilson Creek structure, which last week flowed at a 1480-barrel rate from 6704 feet, continues coring for Sundance.

Market briefs

Outlook—Conditions likely to continue unsettled.

Crude Markets—Still holding.

Refined Oil Markets—Gasoline prices still sagging.

CURRENT OPERATIONS

Week Ended	Daily Crude Production	Daily Crude Runs to Stills
December 25	3,492,600	3,245,000
Previous week	3,439,850	3,220,000
Year ago	3,133,250	2,955,000

CRUDE STOCKS

Date	Crude Oil (Barrels)
December 18	303,041,000
Week ago	303,034,000
Year ago	288,184,000

REFINED OIL STOCKS

Date	Gasoline (Barrels)	Gas & Fuel Oil (Barrels)
December 25	74,437,000	118,659,000
Week ago	73,288,000	119,919,000
Year ago	60,873,000	106,889,000

DRILLING

Period	Wells Completed
Past week	453
Previous week	475
Year ago	418
Year Total:	
This year	453
Last year	418

Technology

PRACTICAL aid to those troubled with either the use of excessive or too small quantities of treating chemicals are made by Henry J. Cavigli in an article on page 17. His paper concisely presents a mode for determining just what amount of chemical will most efficiently break down an emulsion of any given crude. Also described is a method for injecting the chemical into the flow line.

An interesting article on acid treatment in South Texas by Dr. F. B. Plummer is of widespread application although his research work was conducted in the one district. Procedures used and the results and actions of acid are described. His laboratory studies demonstrate the need for expert determinations in each instance. See page 24.

The hardening of mud sheaths and their influence on well production has been a technical discussion of interest for the past three years, but little has been suggested for minimizing and sealing effect. Consequently, the United States Bureau of Mines undertook such a study, and in this issue appears the conclusions reached by this group. Some practical suggestions are made in the article, which appears on page 32.

How one concern overcame pump plunger packing troubles due to corrosion are described by Charles Lynde on page 36. The paraffin did the trick, but it was necessary to devise a method of inserting the hot wax quickly.

Proration Picture

January control not so effective . . . Oklahoma is only state to fix allowable below Bureau . . . Four states exceed recommendations by 18,845 barrels.

THE last state to fix its January production allowable, Oklahoma, did so last week. Oklahoma set its allowed output at 550,000 barrels, which is the same as in December, but still 16,600 barrels below the estimated demand as calculated by the Bureau of Mines.

The Oklahoma action made it possible to figure the relationship of state allowables with estimated requirements of the Bureau of Mines. The six leading states (Texas, California, Oklahome, Kansas, New Mexico and Louisiana) has a combined allowable of 3,135,445, which is 18,845 barrels daily above the Bureau's recommendation.

Four States Over Bureau

As indicated in an accompanying table, four of the leading producing states for January have allowables in excess of the Bureau of Mines estimates of demand in those states.

These four states are Kansas, Louisiana, New Mexico and Texas. Their allowables range from 4000 to 17,600 barrels a day above the Bureau of Mines estimates of demand. In terms of percentage, these excesses range from ½ of 1 percent for Texas up to 7½ percent for Louisiana.

California for January adopted exactly the same allowable as that recommended by the Bureau of Mines. But the proration in California is on a voluntary basis among the producers, rather than under state laws, as in most of the Mid-Continent states. Consequently, California regularly produces considerably more than the goal that is set.

Oklahoma is the only state among the six leaders to prescribe for January state allowables under the Bureau of Mines demand estimate. The state fixed an allowable 16,600 barrels a day or 2.9 percent below the indicated demand.

In contrast with this proration picture for January, that for December involved allowables under the Bureau of Mines recommendation in four of the leading producing states.

In December, only Louisiana and New Mexico exceeded the Bureau of Mines suggestions.

Since four of the six states have allowables above the Bureau of Mines estimated need, and California's actual production usually exceeds its allowable, indications are that January yield will be above the 3,406,800 barrel consumption forecast figure of the Bureau. However, the latter is 84,500 barrels less than calculated for December, 1937.

Arkansas Prorates

January 1 was the effective date of the Arkansas Board of Conservation's proration order for the Miller County part of Rodessa. With the present number of wells (56) the allowable will be 10,329 barrels daily, which is based 50 percent on bottom-hole pressure and 50 percent on acreage.

Oil in storage at Rodessa is to be given clearance, although much of it was produced during the last month.

January 1 also was the effective date for an order limiting well at Schuler, Union County, to 400 barrels daily. Recently completed lower Marine wells in that field have been making from three to seven times that figure.

Texas Hearings Scheduled

Several field hearings have been scheduled for the immediate future by the Texas Railroad Commission.

At Jefferson, on January 14, the commission will hear evidence on the proposal to segregate the Jefferson area from the Rodessa field for proration purposes. Proponents of this plan have advanced the argument that the two fields are separate physically.

A request that the Texas Railroad Commission fix a new dividing line between the Penwell and Jordan fields in Crane and Ector counties was made at a hearing before the Railroad Commission last week. The University of Texas sought to show that the dividing lines between the fields should fall along the North Line of Section 4, Block B 35, and Sections 24 and 25, Block B 16 in Ector County. The Crane-Ector County line now divides the two fields for proration purposes. The University plan would move this dividing line north about 2 1/3 miles in the center of the field.

At the present time, wells in Penwell are prorated on acreage plus potential, while those in the Jordan field have a straight per well allowable. The effect of the division proposed would be to bring more University wells into the Jordan field where allowables are higher, especially for wells drilled closer than 1 to 40 acres.

The plan was opposed by the Gulf and Shell companies, the Gulf contending that Penwell, Jordan and Waddell-Henderson are one continuous oil field, and that spacing and other proration rules should be uniform throughout the three fields. R. B. Fuqua, Gulf Division Chief from Fort Worth, asked that the commission set a hearing in order that these facts might be brought out.

The commission declined to hear evidence on other facts than moving the dividing line since this subject alone had been included in the official notice.

Compact to Meet

A meeting of interest to proration circles will be the Interstate Oil Compact Commission session on January 18 at Oklahoma City. The states of Oklahoma, Kansas, New Mexico, Colorado, Illinois and Texas are members of the compact, which is simply a treaty entered into by all these oil producing states for the purpose of preventing actual physical waste in the production of oil and gas.

Governors to Meet

Another meeting of much importance will be the "price conference" of governors at Hot Springs, Askansas, on January 14. Governor E. W. Marland of Oklahoma invited all the governors of oil producing states to meet with him and discuss crude oil prices, which openly brings this subject into proration. However, some of the states refused to become a party, fearing legal complications.

State Allowables and Bureau of Mines Estimates of Demand for January

(Barrels Daily)

STATE	Bureau of Mines Recommendation	State Allowable Beginning of Month	Excess of State Allowable	Percent Excess
California	678,300	678,300	.....	....
Kansas	179,300	186,472	7,172	4.0
Louisiana	238,400	256,000	17,600	7.5
New Mexico	103,100	107,100	4,000	3.9
Oklahoma	566,600	550,000	*16,600	*2.9
Texas	1,350,900	1,357,573	6,673	0.5
Total six states	3,116,600	3,135,445	18,845	0.6

* State allowable below Bureau of Mines allocation.

Oil in the Courts

Defense demand for mistrial at Madison overruled in stormy session . . . Testifiers declare buying was helpful and price fixing was an impossibility.

IT was stormy going in federal court at Madison, Wisconsin, last week as principal's in the government's anti-trust prosecution reconvened after an 11-day Christmas recess. Dramatic highlight of the week's hearings was a defense demand for a mistrial, which was promptly overruled by the court. Sixteen major oil companies and 37 individuals, many of them high officials of the defendant companies, are on trial, the number having been reduced from 23 companies, 46 individuals and three trade journals since the trial opened 13 weeks ago. Several defendants were granted directed verdicts and others were dismissed on motion of government attorneys at the close of the prosecution's case.

Demands Mistrial

The demand for a mistrial came after John Henry Lewin, of the prosecution staff, objected that the defense was "killing time" by calling Stuart M. Vockel, Pittsburgh, president of Waverly Oil Works Company, and W. J. Brundred, Oil City, Pennsylvania, vice president of the Pennsylvania Grade Crude Oil Association. The court had ruled out previously several documents offered to pave the way for the evidence and expressed a belief that the testimony the defense was attempting to offer was a "waste of time."

"I don't think your honor is fair to me or to this jury," Colonel William J. Donovan, chief of defense counsel, told the court. "I must object to the court's remarks as unfair to me as an officer of this court."

Donovan then conferred briefly with his associates, and added his demand for a mistrial. "In view of the court's remark, I am, with great reluctance, now asking that the court direct the withdrawal of the jury and a continuation of this case." District Judge Patrick T. Stone promptly overruled the motion and directed counsel to proceed with the case.

In the absence of the jury, Donovan then read into the record that Vockel and Brundred would have testified on negotiations between Pennsylvania members of the industry and the petroleum administration board to obtain relief from operating difficulties occasioned by prices of crude and gasoline early in 1935. A letter from E. B. Swanson, of the P. A. B. predicting that Pennsylvania gasoline prices would improve as a result of the "useful and constructive work" of the tank car stabilization committee operating in the Mid-Continent area was offered. The Pennsylvania situation did not improve, however, and further correspondence included the proposal to send the committee of C. E. Arnott, vice president of Socony-Vacuum Oil Company and one of the defendants, into Pennsylvania. It was during this time that the government charges major companies were starting their "price fixing" conspiracy through purchases from Mid-Continent and East Texas independent refiners on the spot tank car markets.

Buying Was Helpful

Dr. John Frey, member of the petroleum administration board under the NRA, who was testifying as court recessed before Christmas, was recalled to the stand for cross-examination by the prosecution. He testified that the buying activities of the major companies after invalidation of the petroleum code, upon which the charges are based, were done with the knowledge but without the "blessing" of the government. In re-direct examination, the defense witness said that the P. A. B. did not direct Arnott, who had told the board of spot market buying plans, to discontinue, and added that "if we had told him to stop buying I think he would have." The latter statement was stricken when Dr. Frey admitted the board exercised no authority to order buying stopped. Over the objection of prosecution attorneys, Dr. Frey testified that he considered buying activities of major companies "helpful to stabilization."

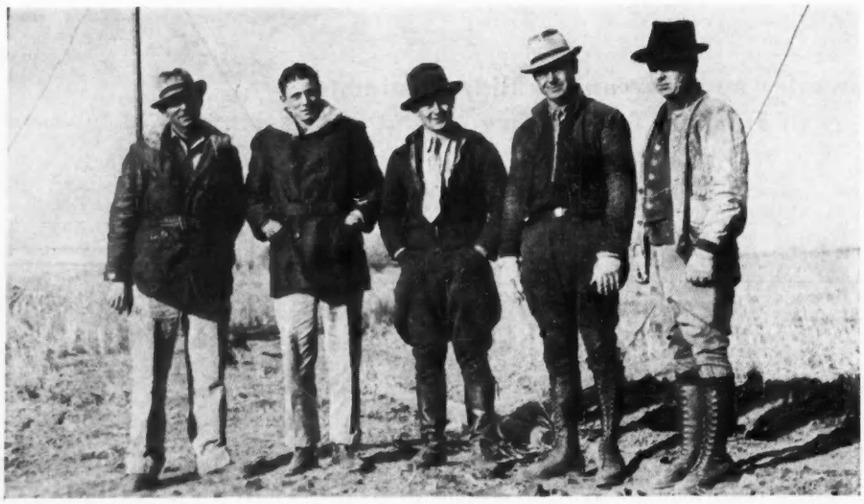
Romance and business were advanced by counsel in the government's "oil conspiracy" case during the Christmas recess. From Baltimore, Maryland, came announcement of the engagement of Janet Keidel, daughter of Dr. and Mrs. Alber Keidel, to John Henry Lewin, son of Mrs. Frank Parr Lewin. Lewin, as a special assistant to the attorney general, is one of the prosecuting attorneys in the case. The wedding is planned for early in the year.

Frederick Wood, counsel for the Sinclair Refining Company and one of the leading defense attorneys, was retained by the Ford Motor Company as counsel in its appeal from the National Labor Relations Board order directing the company to reinstate 29 discharged employes and to stop interfering with union organization. Wood led the fight which resulted in invalidation of the National Recovery Act in the Schechter poultry case. He will be assisted by Louis J. Colombo, Ford attorney who directed the company's case before the labor board. Ford officials are determined to carry the case to the United States supreme court, if necessary.

"Fixing" Refuted

Sidney A. Swensrud, former member of the Harvard Business School faculty and now assistant to the president of Standard Oil Company of Ohio, was called as a defense witness to refute charges in the indictment that the major companies on trial fixed and maintained "artificial" and "non-competitive" prices for gasoline. He testified that if an artificially raised price were set in one community or area now served by Mid-Continent refiners, that market would immediately be invaded by refiners of Pennsylvania, Wyoming, the Gulf Coast or other refining centers just outside the Mid-Continent. He discussed in detail freight rates and their effect on the movement of gasoline, declaring that the cost of transporting gasoline from Oklahoma to Madison was 2.83 cents while the rate from the Gulf Coast is only .27 of a cent more and from New Orleans .06 of a cent less.

During cross-examination of Swensrud, prosecution attorneys inadvertently brought out that gasoline prices outside the Standard of Indiana territory, which the companies allegedly controlled, during March, April and May of 1935 rose higher than prices in the Midwest.



A brief pause during the running of a potential test in Western Kansas. On the left: O. W. Woody, production foreman and R. W. Love, production engineer, both with Atlantic Refining Company; Lloyd Barrick and T. R. Brennan, field gaugers, and J. F. Haely, engineer, Kansas State Conservation Department.

New Allowables Increase Uncertainty

Crude control scheduled for January is not as strict as for recent months... Four states adopt quotas slightly above indicated market demand... Gasoline market is weak; crude market unsteady.

By L. J. LOGAN, Associate Editor

IN spite of the fact that the oil industry holds various important advantages, the outlook at present is exceptionally ominous, being more uncertain than at any time lately since early November, when there was much fear of a general break in crude oil prices.

The latest cause for concern is the crude production control situation. In promulgating allowables for January, the officials of the leading producing states were more lax than in recent previous months.

It is true that the state allowables for January conform very closely with the recommendations of the Bureau of Mines. But the allowables, being less strict than in former months, indicate a decline of cooperation among the states. The January program consequently threatens to initiate a drifting away from the Bureau of Mines forecast. Such a lack of cooperation among the states prevailed for several months in the early part of last year. The result was a substantial building up of crude oil inventories, and there is danger now of a repetition of that running of crude oil into storage.

Unchanged Stocks Indicated

However, the states so far have not moved far enough out of line with the Bureau of Mines estimates of demand to indicate any impending additions to crude stocks.

Under the allowables for January, it is indicated that crude stocks probably will not show any important net change.

The American Petroleum Institute has estimated that crude stocks in the United States will aggregate about 302,000,000 barrels at the end of this year. And judging by the allowables that have been prescribed for the coming month, the crude stocks at the end of January will total about that same amount.

While this is a fairly satisfactory outlook regarding crude stocks, the less strict allowables in January constitute cause for some anxiety.

January Allowables

The six leading producing states, yielding about 92 percent of all United States crude oil production, have January allowables aggregating 3,135,445 barrels daily. That combined allowable is 18,845 barrels a day, or 6/10 of 1 percent, more than the recommendation of the Bureau of Mines.

It must be conceded that this is only a relatively small excess over the market demand. But the excess is significant because of the fact that it contrasts with much more favorable situations in October, November and December. In each of those three months at the close of 1937 the allowables of the six leading producing states were actually under the Bureau of Mines estimates of demand.

Storage Reduced

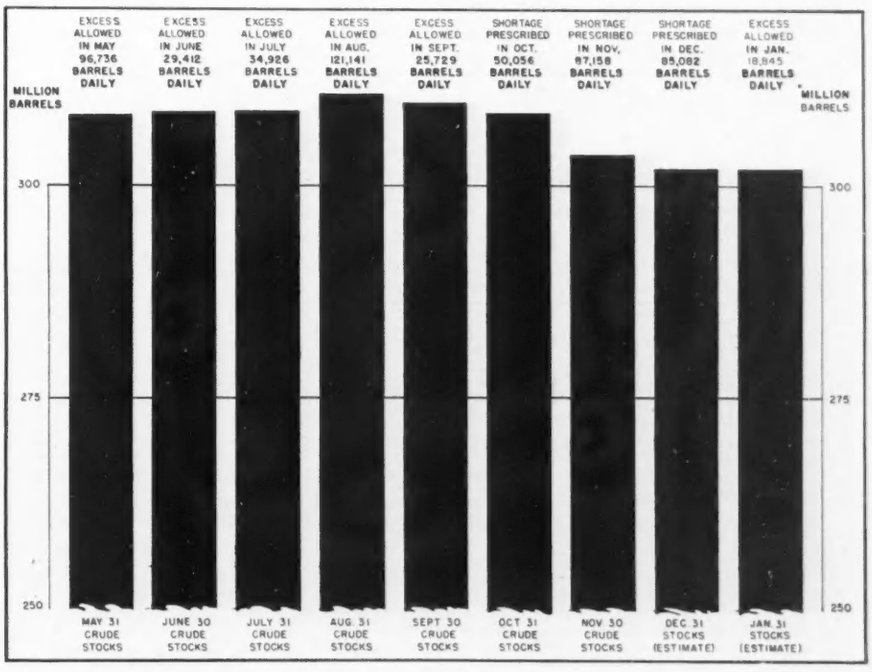
By virtue of the strict allowables in those closing months of 1937, crude oil stocks were reduced materially in October, November and December.

Within the final three months of 1937 the crude storage was reduced approximately 8,000,000 barrels, having aggregated 309,742,000 barrels on September 30, while the total apparently came down to about 302,000,000 barrels by December 31.

Aside from the strict state allowables for November and De-

Effect of Allowables on Crude Stocks

Storage has increased or decreased in response to excesses or shortages of allowables of the 6 leading producing states, as measured by Bureau of Mines forecasts of demand.


EXCESS ALLOWED IN MAY 96,736 BARRELS DAILY
EXCESS ALLOWED IN JUNE 29,412 BARRELS DAILY
EXCESS ALLOWED IN JULY 34,926 BARRELS DAILY
EXCESS ALLOWED IN AUG. 121,141 BARRELS DAILY
EXCESS ALLOWED IN SEPT. 25,729 BARRELS DAILY
SHORTAGE PRESCRIBED IN OCT. 50,056 BARRELS DAILY
SHORTAGE PRESCRIBED IN NOV. 97,158 BARRELS DAILY
SHORTAGE PRESCRIBED IN DEC. 85,082 BARRELS DAILY
EXCESS ALLOWED IN JAN. 18,845 BARRELS DAILY
MILLION BARRELS
300
275
250
MAY 31 CRUDE STOCKS
JUNE 30 CRUDE STOCKS
JULY 31 CRUDE STOCKS
AUG. 31 CRUDE STOCKS
SEPT 30 CRUDE STOCKS
OCT 31 CRUDE STOCKS
NOV 30 CRUDE STOCKS
DEC 31 STOCKS (ESTIMATE)
JAN 31 STOCKS (ESTIMATE)

cember, the crude production and storage situation also was affected constructively by the closing in of the East Texas field for two Sundays in November and two Sundays in December.

That shutting in of the big field represented a cut in addition to the regular restriction of production in Texas under the November and December allowables. Consequently the shut-down of the field accelerated the withdrawals of crude oil from storage. Since the East Texas field has an allowable of nearly one half million barrels a day, the closing in of the field for two Sundays in November shut off about one million barrels of production and permitted taking of about that much oil out of storage in the meantime. Similarly about 1,000,000 barrels was withheld from the market in December through the shut-down of the field.

Following the shut-down of the East Texas field for four consecutive Sundays, however, the Texas Railroad Commission discontinued that practice and it did not order the closing in of any field in the state in January. Consequently the crude control situation in January will not have the advantage of the Sunday shut-downs.

Gasoline Market Disturbing

Aside from the less favorable situation regarding control of crude production in January, the oil industry's outlook remains clouded by the unusually weak and unpromising gasoline market.

Almost continuously since the end of September, the gasoline market in the United States has been steadily declining. The tank car prices of gasoline at the refineries at the end of 1937 consequently were actually lower than at the end of 1936. This decline of gasoline prices below the levels of a year ago has occurred in the face of the fact that crude oil prices have held unchanged in general after moving upward about 10 percent in January of 1937.

Consequently, the gasoline market is in an unfavorable relation to the established crude oil prices, and the gasoline market is tending to pull down the crude market, although with but little success.

Crude Market Resistant

However, it undoubtedly is true that the resistance of the crude oil market so far has been based largely on the exceptionally strict regulation of crude production. As mentioned previously, the output of the wells of the country was curtailed actually below market demand, making it necessary to take some crude oil out of storage. Such drastic curtailment of production and the attending withdrawals of crude from storage naturally bolstered the crude market, and the existing crude prices were maintained.

But for January such strict control of crude production is not in prospect, and it remains to be seen whether or not the present crude postings can hold.

In recent weeks various developments in the crude oil market have given warning that difficulty may arise henceforth in maintaining the established prices. The latest evidence of weakness demonstrated in the market was the drastic reduction last week of prices in two Michigan fields. In those fields prices were cut 29 cents a barrel or from $1.09 to 80 cents a barrel. It was pointed out that this was the first time since code regulation of the industry that oil has sold for less than $1 a barrel in Michigan.

Crude oil prices also were reduced recently in the Lisbon field of North Louisiana.

In November and December the crude market was holding comparatively steady. But in the several preceding months the market showed signs of weakness in various districts. For example, certain pipe line companies inaugurated proration of purchases from the leases to which they were connected in certain Kansas, West Texas, and North Louisiana fields.

Gasoline Stocks Too High

The principal reason for the recent and current weakness of the gasoline market has been the excessive supply of gasoline in storage. The gasoline inventories, aggregating 74,437,000 barrels as of December 25, are the largest for this time of the year in the history of the industry. These present stocks are 22.3 percent larger than those held at this time last year. Yet the demand for gasoline lately has been running less than 10 percent larger than a year ago, and the Bureau of Mines has estimated that requirements in January 1938 will be only 8 percent more than for January, 1937.

At the present levels gasoline stocks are only about 9,000,000 barrels smaller than the all-time peak reached last spring. It now is indicated that in the coming spring the inventories will rise materially above 90,000,000 barrels. That would be considerably more than the storage peak of last spring, which itself afforded wholly adequate supplies.

Thus it is now indicated that the industry may be handicapped throughout most of 1938 by surplus gasoline stocks and resultant unsteady gasoline prices.

In the meantime no relief is in prospect regarding the unsatisfactory gasoline situation. For the next several months the industry will be obliged to operate refineries at comparatively high rates, in fulfilling the existing heavy market demand for fuel oils for heating purposes. And in meeting this demand, the industry necessarily must turn out more gasoline than the market can absorb, causing further additions to the already burdensome gasoline stocks.

Effect of State Allowables on Crude Stocks

MONTH	Bureau Forecast of Demand	†Daily Allowable For 6 Leading States	Excess of State Allowables		Stocks at End of Month	Stock Change in Month
			Barrels	Percent		
1937:						
January	2,770,700	2,882,181	111,481	4.0	288,184,000	— 1,425,000
February	2,835,300	2,983,596	148,296	5.2	289,972,000	+ 3,213,000
March	2,924,400	3,096,142	171,742	5.8	297,496,000	+ 7,524,000
April	3,006,600	3,081,699	75,099	2.5	304,161,000	+ 6,665,000
May	3,083,100	3,179,836	96,736	3.1	308,209,000	+ 4,048,000
June	3,109,900	3,139,312	29,412	0.9	308,788,000	+ 579,000
July	3,159,700	3,194,628	34,926	1.1	308,666,000	— 122,000
August	3,196,600	3,320,741	124,141	3.9	310,923,000	+ 2,257,000
September	3,234,600	3,260,329	25,729	0.8	309,742,000	— 1,181,000
October	3,280,400	3,230,344	*50,056	*1.5	308,472,000	— 1,270,000
November	3,226,600	3,139,442	*87,158	*2.7	‡303,675,000	—‡ 4,797,000
December	3,202,100	3,117,018	*85,082	*2.6	⧗302,000,000	—⧗ 1,675,000
1938:						
January	3,116,600	3,135,445	18,845	0.6	.....	.....

† The 6 leading producing states are: California, Kansas, Louisiana, New Mexico, Oklahoma and Texas
* State allowable below Bureau of Mines estimate of demand.
‡ Estimated from reports as of November 27 and December 4.
⧗ End of December stocks estimated.

Geophysical Interpretations

By M. S. BLACKBURN, Geophysicist

THE following analysis of geophysical interpretations will apply to any scientific method and is the result of 6 years gravity work together with 2½ years of research work with electro-magnetic waves for the location of subsurface structural conditions in the Balcones and Gulf Coast areas of Texas.

First: Regardless of the method used, its value depends not altogether on the accuracy of the instruments (assuming they are the best available) but almost entirely on the ability of the interpreter.

The above statement is the result of my own experience and the opinion of other physicists with whom I have discussed the subject.

It is sometimes possible to infer two different pictures from the same field data, both equally valid from an interpretative standpoint. This leads to the fact that the value of geophysical work is vastly improved when the interpreter is assisted in making his final picture by a geologist who can furnish geological data for the region under consideration. It has always been my personal opinion that geophysicists should collaborate with geology for its own protection and thus avoid interpretative mistakes that could be eliminated by such an association.

Geological data can in no way alter the geophysical field results, but it will help the interpreter to make a correct decision between two possible interpretations.

All geophysical pictures are inferred from instrumental values obtained in the field; no matter by what method these values are obtained they are interrelated and interdependent upon each other and are valueless if considered alone.

Hisenburg's principle tells us that just half of the symbols represent knowable quantities. The knowable quantities are the pointer readings of the instruments at different stations, while the unknowable quantities are the structural conditions of the subsurface. From the knowable quantities the interpreter must infer the shape and size of the subsurface structure.

A geophysical picture becomes a system of stations taken at intervals over a given area. It makes no difference if one is measuring the time interval of a reflected wave, the density of the earth's gravitational field, or the intensity of an electro-magnetic wave, the results are the outcome of a train of influences varied diastrophism.

Whenever one states the properties of a body in terms of physical quantities he is imparting knowledge as to the response of various external indicators to its presence and nothing more.

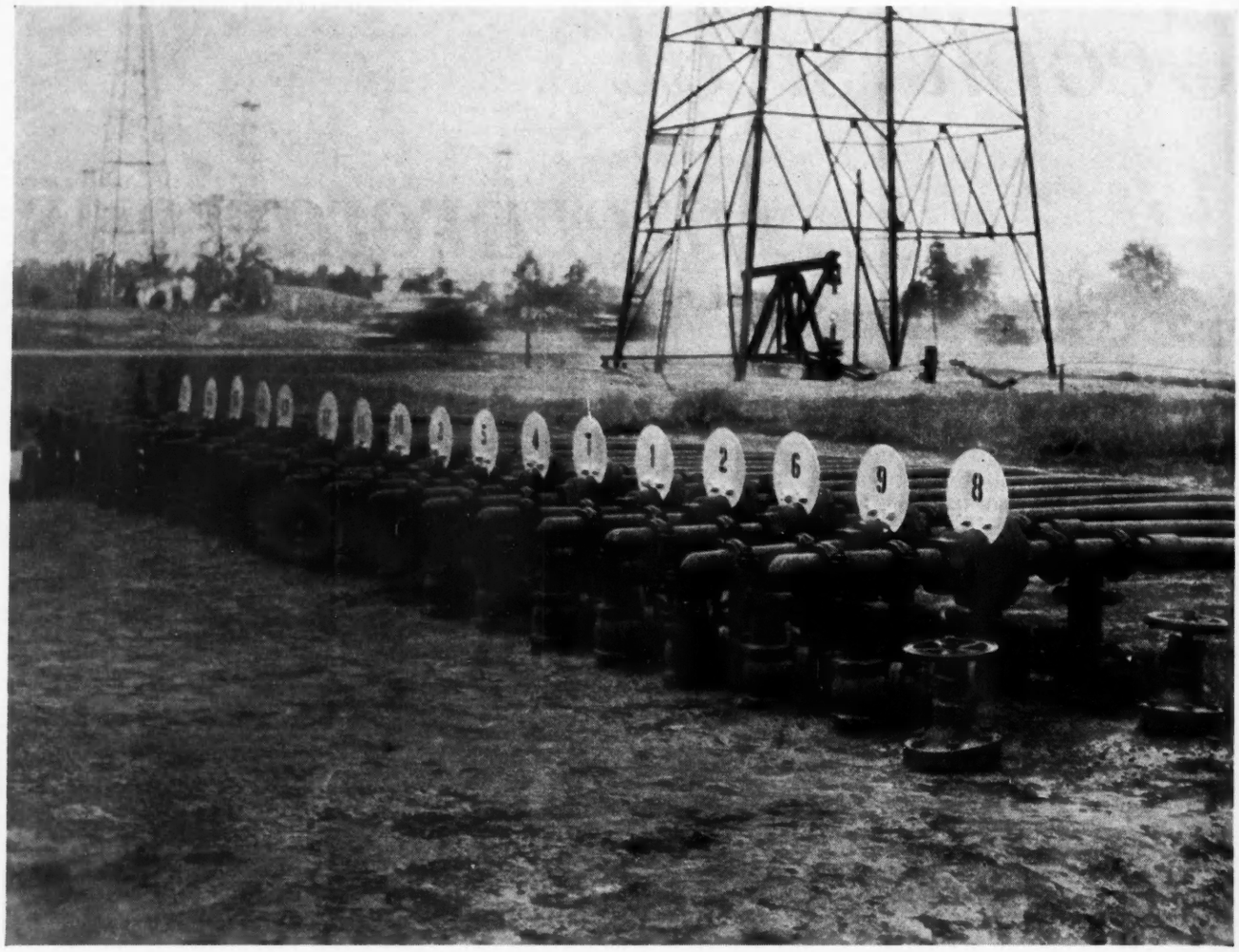
Let us consider an experience that is common to all. We see no object. The interaction of light waves with the object starts a train of influences which reaches our nerves and brain and becomes translated into sensory experience. From these influences one can infer the presence, shape, color and whether the object is rough or smooth; but one can only estimate its size by comparison. One is told nothing about its distance, whether it is hollow or solid, nothing about its mass, whether it is light or heavy. One can find out nothing about the actual material of which it is composed. and can tell its direction only by the use of a compass. In each case the inferences one can draw from the train of influences are governed by the interactions between the object and electro-magnetic waves (light waves).

Without the light waves, the above influences would not exist, and one would not be aware of the presence of the object. Yet its presence can be detected by other means.

For the sake of comparison let us assume that our object is a cliff several hundred feet in height and width, and a considerable distance away. We will substitute a torsion balance for our observer and we find that from the torsion balance we can infer the direction of the cliff but it tells us nothing about its distance. If we knew its distance we could calculate its mass, and vice versa, but we would still know nothing about its shape. By taking numerous stations we could infer its approximate location, size, and shape, but we would never be able to tell its composition. Let us use a seismograph in place of the torsion balance and by exploding a charge of dynamite and measuring the time interval of the reflected wave we could calculate very accurately its distance. By taking numerous stations we could determine its size but like all other methods we could find out nothing about its composition.

The vertical component gravimeter would give no indication of the cliff's presence in a horizontal direction, but could tell its position and size in a vertical direction. With the electro-magnetic wave instruments, its presence, direction and size could be inferred from the interaction between the cliff and the electro-magnetic waves as recorded by the receivers, but nothing could be told about its distance or composition.

From the above it is obvious that each geophysical method has its good points. Some can give greater detail than others but are slower and more expensive. Some work better in certain regions than others. All in all, it seems that a combination of the different methods could be used to a great advantage. The fast instruments that can locate structure but cannot tell depth could be used for reconnaissance work and their findings later checked with a depth finding method. This should not only give a double check but effect a great saving in time and money.



Flagging Well Flow Lines Simplifies Manifold Problem

IF too much time has not elapsed, the man who supervised the connection of a flow manifold such as the one illustrated, might be able to flow any desired well to the separator without a detailed blue print. But, in a field the extent of East Texas,' and as long-lived changes in lease operating personnel will occur, and the newcomer is apt to become confused as to proper valves to open and close unless some positive means of identification is furnished him.

The set-up shown carries 42 valves, an even two score controlling the output from half that many wells into the common separator. And, as the locations and completions of the wells on the lease did not follow any geographical or other natural guide, it was inevitable that the flow lines would not come in to the separator manifold in the order in which the wells were numbered.

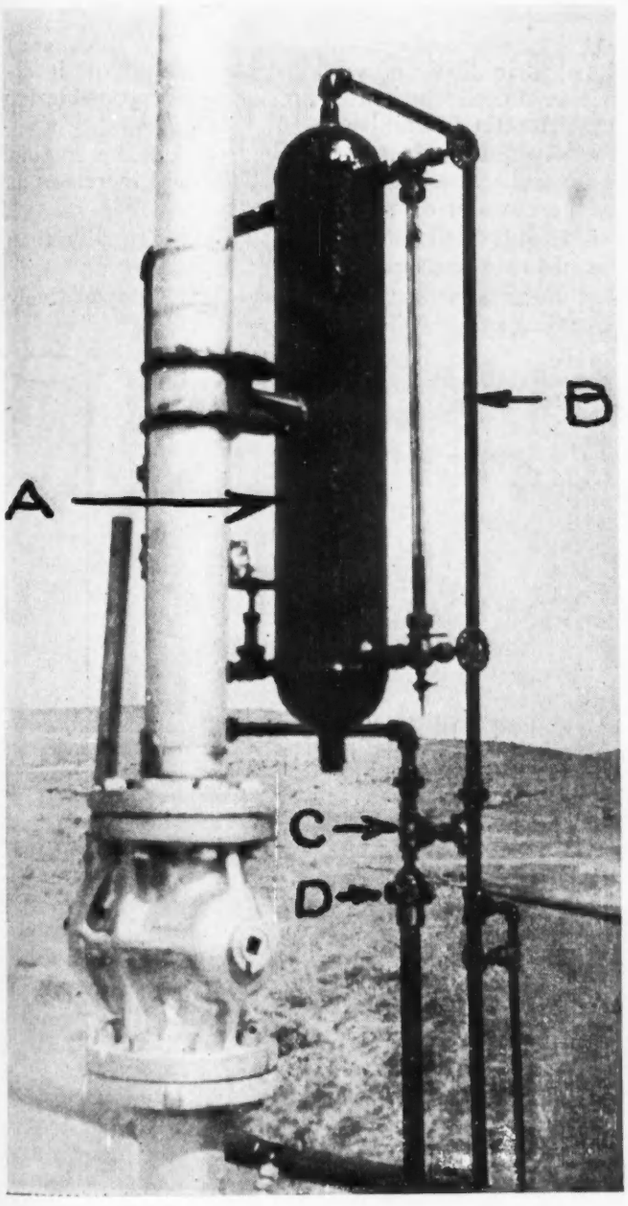
To avoid confusion and provide simplified flowing of any designated wells, sheet iron discs, 8 inches in diameter and cut to bolt to the check flange with two of its usual complement of bolts, were provided. These discs, painted white and bearing large numerals in black, readily identify the well the particular line serves. At the extreme left are two discs, still black. These are as yet unconnected, being painted and numbered only when actually placed in service.

A feature of this manifold is the use of 120 separable couplings, permitting ready replacement of any unit without deranging its neighbors or requiring an elaborate tool kit.

Treating Emulsions

DETERMINATION OF MINIMUM AMOUNT OF TREATING CHEMICAL NEEDED AND METHOD OF INSERTION IN CRUDE FLOW LINE

By HENRY J. CAVIGLI, Petroleum Engineer



CAVIGLI makes herewith a practical contribution to those of you who have been troubled with treating emulsions and suffering one of two losses: the loss occasioned by use of excessive treating chemical, and the loss of oil occasioned by use of too little chemical. His paper concisely presents a mode for determining just what amount of chemical is required to break down an emulsion in any given crude. It presents also a method for inserting, or injecting, the chemical into the crude flow line. Cavigli deals with a technical problem in a manner that can be understood by men who hold degrees in neither chemistry nor physics. The article distinctly is worthwhile.

AMONG the problems that oil operators are confronted with, none is so difficult to analyze and correct as that of extracting the water produced in many fields along with the oil and gas. Removal of this dispersed colloidal water so firmly held by the oil has proven perplexing and costly to producer, refiner, and pipe line operator.

Emulsions, unfortunately, are not all alike. Hence, they require different methods of treatment in various fields. Basically, an emulsion is a system containing two immiscible liquid phases, one being dispersed in the form of minute globules in the other. This state of emulsification, or heterogenous mixture, is brought about by the presence of colloidal material and develops properties differing from either component in viscosity, color, density and surface tension.

How They Occur

Perhaps the best and most logical explanation of how emulsions occur is concerned with interfacial

FIGURE 1
Apparatus for chemical insertion. A, supply tank; B, "equalized pressure" lubricating system; C, regulator valve; D, look glass.

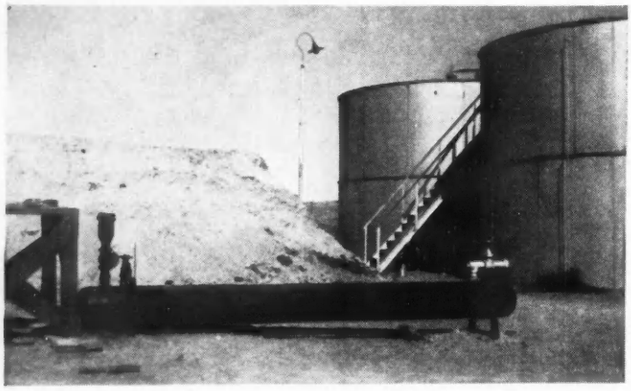


FIGURE 2
Reservoir for supply tank

tensions developed between the oil and water which, in turn, are affected by the presence of impurities in the water or oil. Under a microscope, emulsions are shown to be composed of minute globules of water distributed in the oil mass. These small water spheres are enclosed by elastic oil films and resist rupturing to a marked degree.

In the separation of component water and oil from an emulsion, various factors must be considered. In some cases, the water separates out quite readily. In others, however, the tenacious films of oil will not let the countless water globules coalesce and settle to the bottom. It is with the latter type of emulsions that chemists and other technical men have struggled relentlessly to perfect a means of separation.

The size of the water globules and their distance apart are important factors influencing stability. Logically enough emulsions containing large globules of water tend to coalesce to a greater degree than emulsions containing smaller, more numerous globules. These globules, large or small, do not break up and join into a larger mass as do scattered mercury drops, but rather, distort and break apart into smaller particles.

Laboratory Studies

Work undertaken by undergraduate students at the University of California under direction of Dr. A. J. Carlson illustrated certain principles about emulsions and the effect of differing conditions under which they were mixed.

The following conclusions were definitely arrived at:

a. Asphaltic base or napthene oils form emulsions more readily than paraffin base oils.

b. A certain maximum emulsification is reached by adding a certain amount of water, with a gradual decline of emulsification if more water is added.

c. Emulsification is greatly encouraged by the presence of air in mixing.

d. The effect of reagents (asphalt, clay, silica, etc.) shows that dispersed colloidal particles at the interface of the oil and water are largely responsible for the character of emulsions.

e. For low percentages of water in oil, the amount of difficulty resolvable emulsion formed increases as the percentage of water increases.

f. Highly viscous oils emulsify more rapidly than oils of low viscosity.

g. Emulsions containing large and comparatively

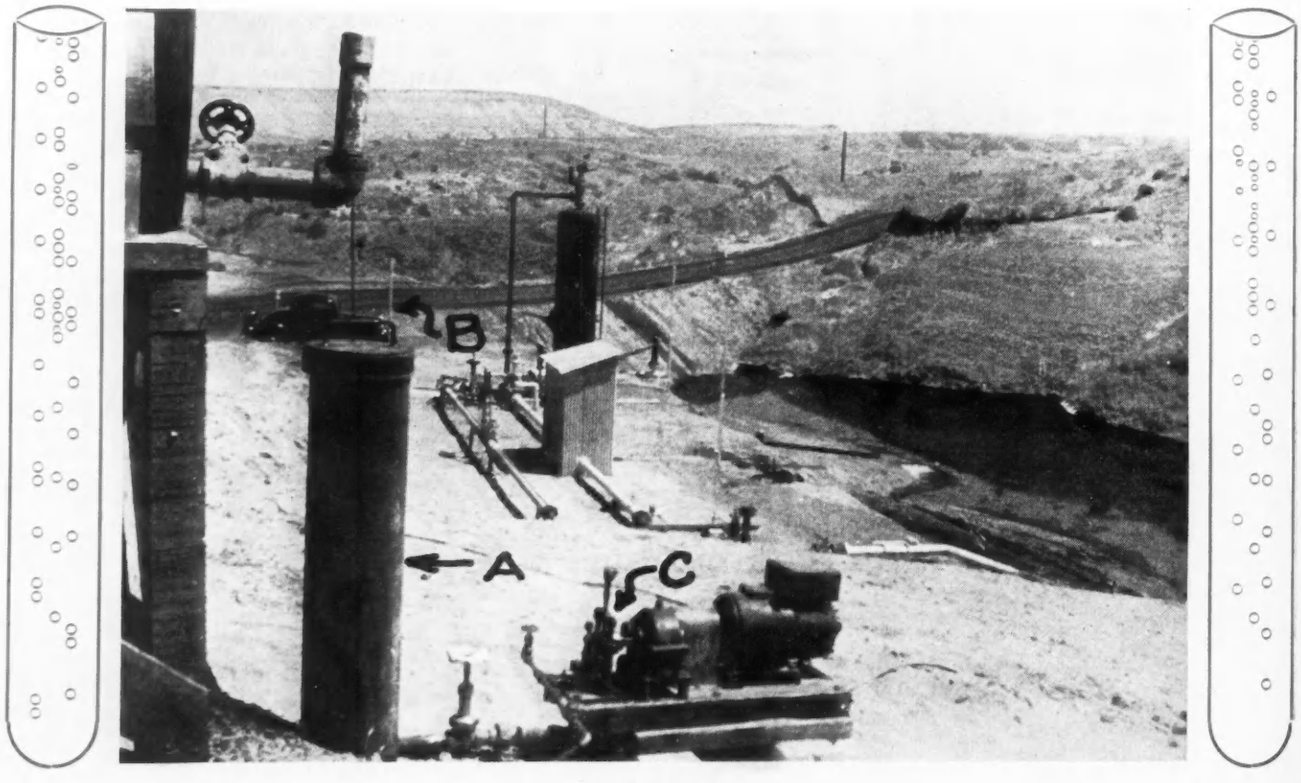


FIGURE 3-A
Container, A, fitted with a hook gauge, B served to hold the treating fluid feeding the miniature pump, C.

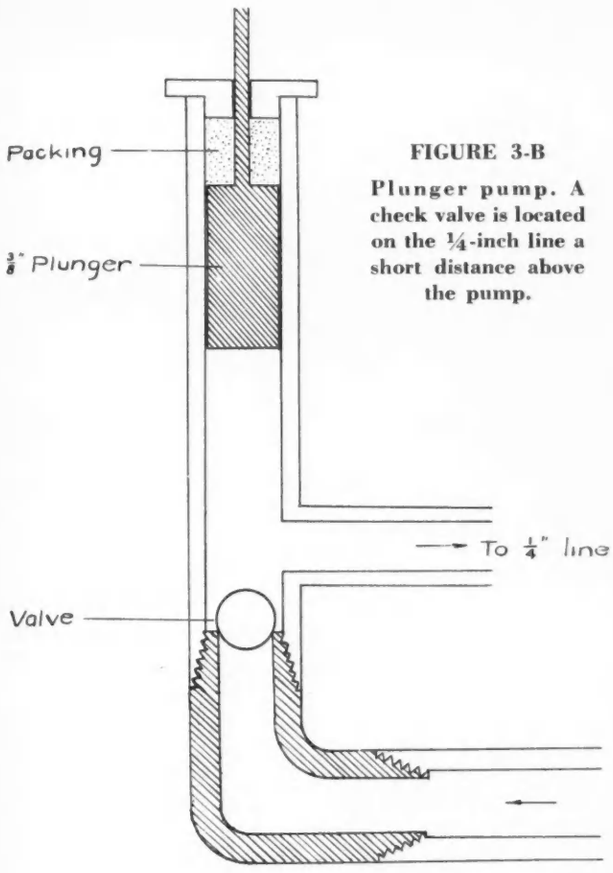


FIGURE 3-B

Plunger pump. A check valve is located on the ¼-inch line a short distance above the pump.

few globules are easier to separate than ones in which the globules are small and more numerous.

h. Centrifuging may break down certain emulsions.

i. A large variation in the size of globules occurs in an emulsion.

Breaking Emulsions

The whole problem of breaking emulsions lies in rupturing the tenacious films enclosing the water droplets, and it is this line that scientists have proceeded in research. Many different types of chemicals, most of which are basically sulfonic compounds and soaps, have been developed. However, the contaminating effect on the oil of many render them useless. On the other hand, we find today on the market, emulsion-breaking compounds and mixtures which are truly representative of many years of untiring efforts and are being used in many fields with great success.

Heating has also been advocated as a means of breaking up emulsions. This has the effect of expanding enclosed water droplets and thus rupturing the oil films surrounding. The use of electric currents, conducted by means of electrolytic material in the water, has been tried. This has the double effect of neutralizing charges on the globules, (which may be instrumental in the formation of emulsion), and also of heating the emulsion.

Field Problems

Conditions prevalent in many fields present peculiarities which may not be found in others. On the other hand, common difficulties do occur. Now that liquid emulsion treating chemicals are popular in many fields, one problem involves the insertion of an amount of fluid into the production oil such that a balance is attained between cost of material and efficiency of oil and water separation. To this end and to the methods of regulation of flow of the viscous treating chemicals in the field many operators have turned.

Tests at Kettleman

To determine the most economical amount of emulsion treating material to efficiently segregate the water globules, and a suitable method of regulating its insertion in the producing crude, a series of experiments were conducted in the field of Kettleman Hills. One such test was performed on a well producing an average of about 950 barrels of 35.6 A.P.I. oil with an approximate total cut of 9.4 percent.

Being located near the outer edge of the field, near the encroaching edge water, the well produced a rather large quantity of water, as shown by the cut. Since gas-lift is the main method of bringing the oil to the surface in the deep wells of Kettleman, a very great amount of mixing occurs, resulting in ideal conditions for the formation of emulsions.

Installation of Lubricator

To cope with these conditions apparatus for chemical insertion in the form of a small lubricator was set up at the flow line leading to the low pressure traps.

As Figure 1 illustrates, a supply tank (A) furnished the chemical entering the "equalized-pressure" lubricator system (B) regulated by means of a ½-inch valve (C). The amount of treating fluid entering was indicated by the use of a "look-glass" (D). The supply tank at the trap held 12 quarts and was readily filled from a reservoir constantly under pressure tapped from a nearby line shown in Figure 2.

For the climatic and field conditions presented at Kettleman, the control of flow rate, dependent on a ½-inch valve, presented a problem. The opening of the valve necessary for the flow of such a small quantity of chemical as was needed was of a low magnitude and, consequently, foreign material from the supply tank blocked the opening, preventing any further entrance of fluid. Limitations in regulating the flow through the lubricator were also presented by the rather high viscosity of the emulsion-treating chemical used. Temperature changes also affected the flow.

Thus, the extravagant use of treating chemical in assuring a continuous amount entering the crude through the lubricator forced an investigation. In many wells, three and four times as much treating compound as was needed entered into the lines. In others, flow for a 24-hour period was practically nil.

Small Pump Used

Use of a small electric motor attached to a low speed reduction unit running a ⅜-inch pump was suggested. Figure 3B shows such a pumping unit. With an adjustable stroke and leading to the flow line by a ¼-inch steel tubing it was found to be quite delicate and dependable on adjustment. As shown by Figure 3A, a container (A) fitted with a hook-gauge (B) served to hold the treating fluid feeding the miniature pump (C).

By knowing the diameter of the container, and

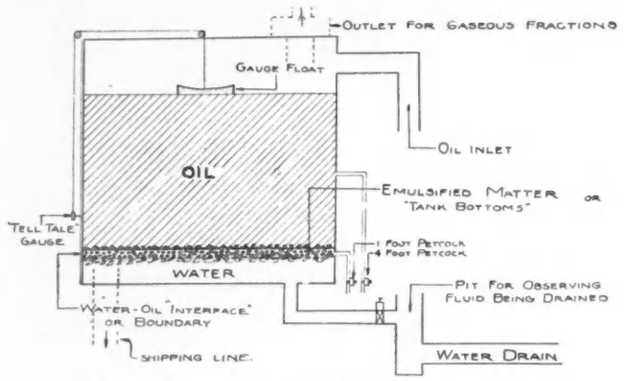


FIGURE 5

Gauge tank. After insertion of the treating fluid into the low-pressure trap lead line, production is accumulated in a 500-barrel tank where it is gauged and shipped at 8-hour intervals.

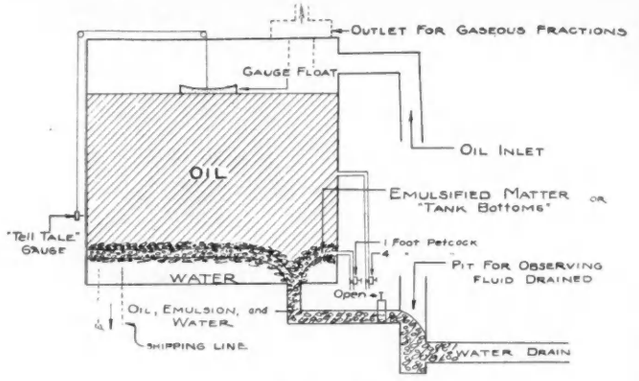


FIGURE 6

Gauge tank. Too rapid a rate of flow into the observation pit results in an unrepresentative sample of the tank bottoms. Water accumulated on the bottom of the tank should be carefully removed to the desired position.

noting the difference in fluid level, it was possible to determine the amount pumped constantly throughout the 24 hours. The stroke of the pump could be varied from almost zero up to a point pumping a capacity of nearly 30 quarts per day.

Soon after installation of the pumping unit, its practicability was observed. The constant pressure held (approximately 25 pounds) insured a steady flow of constant volume into the flow line from day to day.

Minimum Amount of Chemical Required

It was agreed to start with a flow of treating fluid known to be insufficient, increasing the rate at three day intervals until no apparent trace of thick, slimy emulsion was found on examining the oil-water boundary or "tank bottom." This procedure, however, soon proved unsatisfactory, due to the fact that the spongy emulsion matter piled up on the tank bottom before the minimum rate of chemical needed was arrived at. Thus, no results could be determined until the emulsion was cleaned up by draining the tank and the procedure repeated with an increased starting rate of flow. It was immediately noted that the method was impracticable.

Procedure Reversed

Then it was decided to reverse the above procedure; that is, to start with an excessive amount of chemical treating fluid and gradually lower the rate. In this manner, the point at which dirty settlings of emulsion appeared on the tank bottom was noted. This was accomplished by carefully draining out the water collecting at the bottom of the tank and inspecting the water-oil interface. Samples from this point were carefully observed as to color, thickness, and general "cleanliness," as indicated in Figures 4 and 5. Care was exercised in draining the water

TABLE 1

DATE	Tank Cut	Treating Chemical Quarts	Total H_2O Drained Barrels	Total Production Barrels	Ratio	Tank Bottoms	Remarks
8- 3-37	E0.6/W1.6	4.0	49.7	1045.4	43,907	Dirty	
8- 4-37	E0.5/W1.6	1.4	41.5	1039.3	129,335	Dirty	
8- 5-37	E1.6/W1.0	0.6	16.5	1056.0	295,680	Dirty	Not pumping
8- 6-37	E50./W0.0	4.0	45.6	1031.1	43,306	Very dirty	Not pumping
8- 7-37	E0.3/W1.6	1.9	55.4	1027.8	43,167	Dirty	
8- 8-37	E0.9/W0.7	1.6	47.0	1014.5	89,703	Dirty	
8- 9-37	E0.8/W1.8	1.1	41.5	1017.3	155,369	Dirty	Pump O. K.
8-10-37	E1.7/W1.1	1.6	44.2	950.6	145,183	Fair	Inc. stroke ¼ turn
8-11-37	E0.6/W2.0	2.0	36.0	950.5	99,803	Fair	Inc. stroke ¼ turn.
8-12-37	E0.4/W0.8	....	49.7	920.2	77,297	Fair	Left stroke alone
8-13-37			No sample				
8-14-37	E1.0/W1.4	2.1	36.0	942.3	76,477	Good	Inc. stroke ½ turn
8-15-37	E0.2/W2.4	2.3	49.8	931.3	68,025	Very Good	
8-16-37	E0.3/W2.0	2.3	52.6	884.3	64,592	Very Good	

TABLE 2

DATE		Treating Fluid Quarts		Production (Barrels)		Ratio	Tanks Bottoms	
				Oil	Water			
11-21	.....	1.6	....	404.5	10.0	42,468	Fair	
11-22	.....	1.5	....	412.3	18.4	42,179	Fair	
11-23	.....	2.0	....	410.6	20.1	34,490	Good	
11-24	.....	2.4	....	415.4	10.0	29,083	Excpt. clean	
11-25	.....	2.8	....	409.4	10.8	24,564	Very clean	
11-26	.....	1.9	....	412.2	8.0	36,450	Fair	
11-27	.....	2.0	....	413.0	23.0	34,687	Good	
11-28	.....	3.1	....	396.0	6.0	21,461	Very good	
11-29	.....	2.9	....	391.0	8.0	22,650	Clean	

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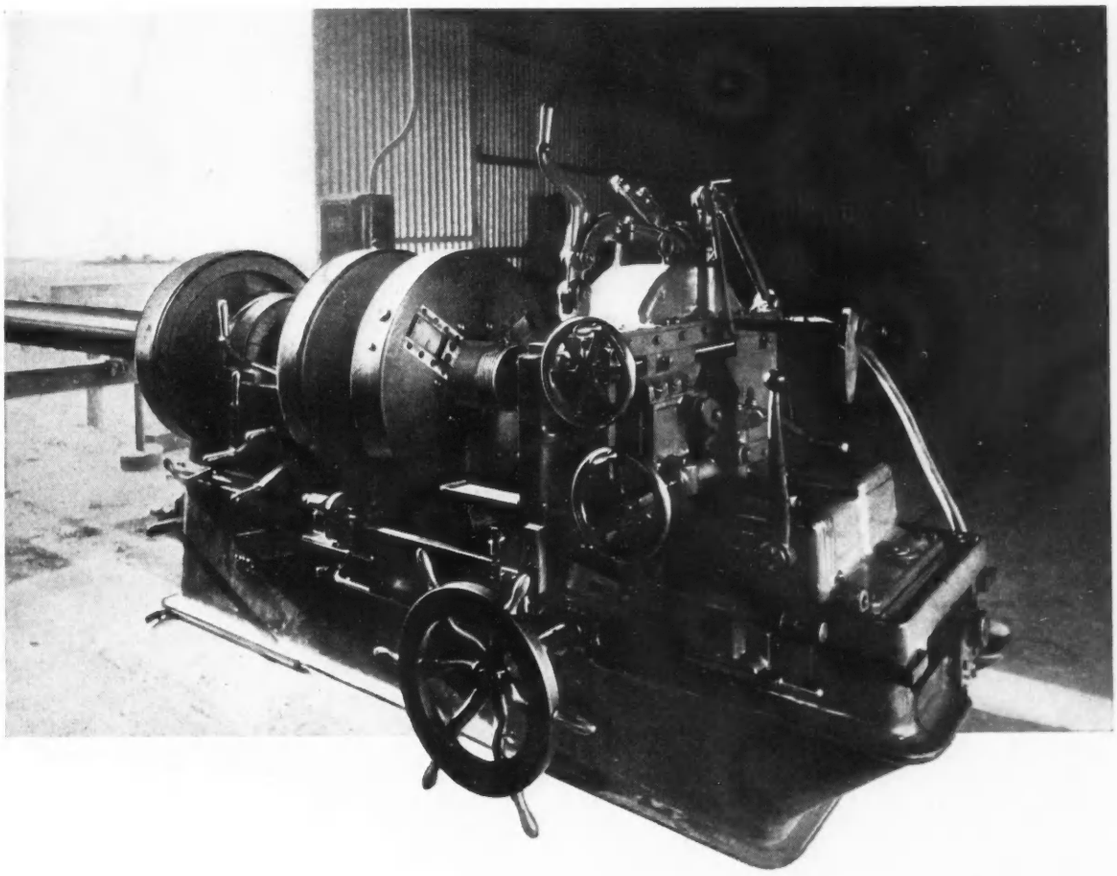

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from the bottom of the tank to avoid conditions shown in Figure 6, illustrating the removal of an unrepresentative interfacial sample. Samples were also taken daily from the one-foot petcock on the 500-barrel gauge tank and centrifuged for water and emulsion cuts. These figures gave comparative indications of how well the oil was being "cleaned" and water separated out from day to day.

As the test progressed, results and observations were carefully recorded and compared daily to note trends with varying amounts of treating fluid. Table 1 gives an example of such records kept, including ratio values explained subsequently. From the reports of the gaugers, the total fluid produced (oil plus water) was obtainable. Thus with the known amount of chemical flowing into the lines and a record of the total production, a ratio was computed involving these two quantities. This ratio (shown on Table 1) expressed the total fluid produced, divided by the number of quarts of treating material used, and approached a limiting value as the test progressed.

Analysis of Data

Careful analysis of data obtained during a period of time, gave a value which was very close to being a minimum rate of chemical flow to completely settle out emulsified water. By flowing this rate for a prolonged period of time, and noting no accumulation of emulsion impurity on the tank bottom, the rate of flow was declared satisfactory and as close as conditions would allow. Table 2 illustrates a series of runs in such a near state of "equilibrium" over a period of days on one of the wells. The total fluid produced (in quarts) over the quantity of treating material used, approached, for these values of flow, a number expressing for the particular well the most economical and efficient amount of treating fluid to accomplish the work.

An average taken of the values shown on Table 2 gave 2.2 quarts of chemical and a ratio of approximately 32,000, meaning that a nearly perfect value for treating the crude oil was one quart of emulsion treating fluid to 32,000 quarts of oil. Due to unavoidable experimental inaccuracies, however, limits were not so finely divided. In this case, the true ratio was taken to lie between the limits of 30,000 to 1 and 35,000 to 1 parts of produced crude to treating material.

Cleaner Oil and Large Cut in Expenses

Thus, with the aid of a reliable method of injection, coupled with intensive experimenting as to the most economical treating fluid—total producing fluid ratios, a definite quantity resulted giving the most efficient rate of flow. Not only did this result in a more uniformly clean oil, but in a drastic cut in expense which last year amounted to thousands of dollars in this field.

By following the same general procedure of experimentation as given above, and using different brands of treating fluid, it may be seen that the most efficient type for any particular kind of oil and underground conditions can be determined.

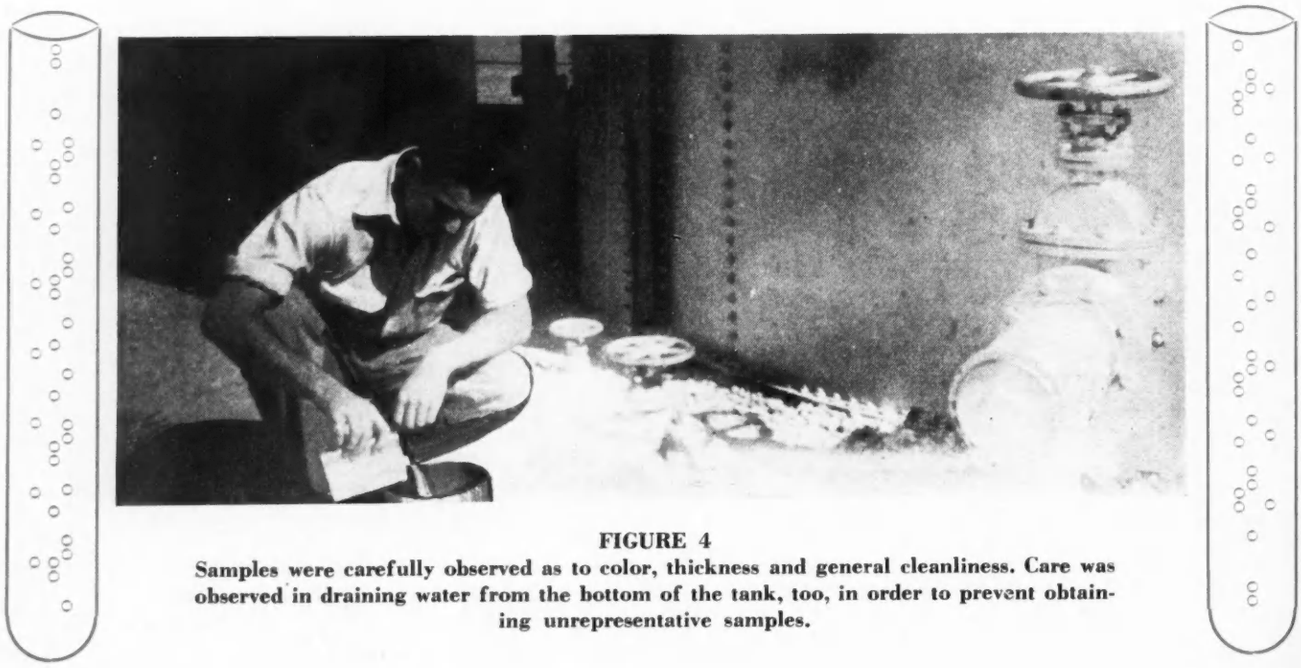

FIGURE 4

Samples were carefully observed as to color, thickness and general cleanliness. Care was observed in draining water from the bottom of the tank, too, in order to prevent obtaining unrepresentative samples.

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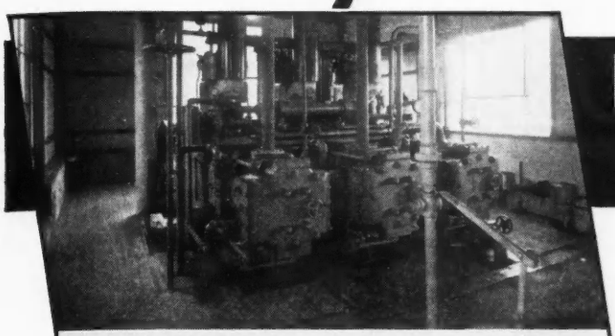
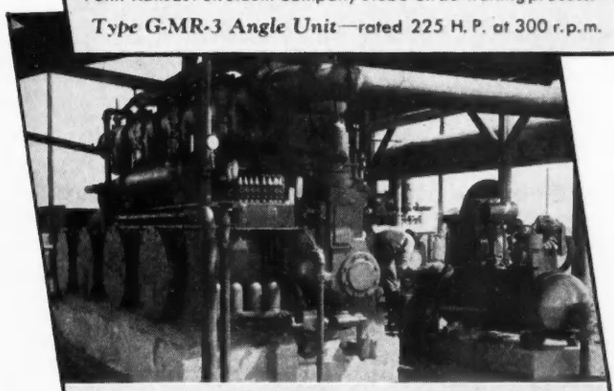
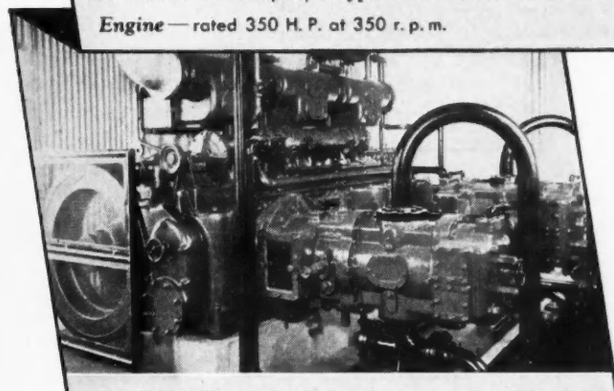


CLARENDON, PA.—Compressing propane for refrigeration in Penn-Kansas Petroleum Company's lube-oil de-waxing process. *Type G-MR-3 Angle Unit*—rated 225 H. P. at 300 r.p.m.



FENTON, LA.—Driving centrifugal oil pipe-line pump for Continental Oil Company. *Type G-MR-4 Vertical Gas Engine*—rated 350 H. P. at 350 r. p. m.



SAN MIGUELITO, CALIF.—Pumping dry gas from Continental Oil Company's Hobson lease into Industrial Fuel Supply Company's main line. *Type G-MR-3 Angle Unit*—rated 225 H. P. at 300 r. p. m.

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Acid Treatment of Oil Sands in South Texas

By F. B. PLUMMER, University of Texas

The most important single item in acidization work in South Texas is regulation of the process so as to increase the oil flow without increasing the water production too much.

THE popular conception of the acid-treatment process is that the acid is forced by pressure back into the oil-producing formation and that in passing through the capillary spaces and intersices in the rock it enlarges the pores and passageways by solution, so that more oil can flow into the well. The following is a quotation from a popular article on the subject and illustrates this conception clearly. "When a well strikes a tight non-porous pay horizon, acid will eat its way for some distances through those dense beds and possibly connect the holes with more porous beds close by."

Chemical Explanation of the Process

The exact details of the action of acid on an oil- and water-bearing formation is not fully known, because one cannot get down into the bottom of a hole and see what goes on. However, laboratory studies of the action of dilute acid on limestone threw some light on the process. First, the reaction between hydrochloric acid and limestone is very rapid and takes place according to the following equation:

$$CaCO_3+CaCl_2+H_2CO_3$$

The $CaCl_2$ is soluble in dilute acid. The H_2CO_3 dissociates into H_2O and CO_2, and the excess of CO_2 passes off as a gas.

$$CaCl_2+H_2CO_3 \rightarrow CaCl_2+H_2O+CO_2$$

The $CaCl_2$ plus H_2O, known as spent acid, has no action on limestone but passes on into the rock to be followed by fresh acid, which is quickly neutralized when it comes in contact with limestone.

The limestones of the Edwards producing horizons have about 20 percent porosity, and the Edwards has a fairly high permeability. The Austin generally has less porosity and a decidedly lower permeability. The interspaces in both the Edwards and the chalk in most places are fairly small. Most of the pores in the Edwards are less than .5 mm. in size, and few are hardly any larger than 2 mm. Those in the chalk average less than .025 mm. When the acid enters these small pores, it is reduced to very small columns or threads of fluid having a large surface area in contact with the limestone. These little threads of acid react very quickly with the limestone and become spent almost instantaneously. At least 90 percent of the acid is used up before it gets into the rock a distance of two inches. If HC1 is run through a tube containing fine grains of Edwards limestone, 90 percent of the solution of the limestone takes place near the mouth of the tube into which the acid is poured. Hence, it is thought that about 90 percent of the action on the lime in an oil well is on the face of the limestone surrounding the hole. The main effect of the acid treatment is to enlarge the hole. This enlarging action is strikingly illustrated by experiments carried out on cores of limestone taken from oil-producing formations. A core of Edwards limestone having a ¼-inch vertical hole through its center and treated with HC1 under 75 pounds per square inch pressure has the shape illustrated in Figure 1A. A similar core of chalk similarly treated is shown in Figure 1B. It is obvious that the only effect on the core is to enlarge the hole and to produce a shallow depression or dimples at points of greatest permeability.

The amount of the enlargement can be calculated by knowing the amount and strength of HC1 used and the density of the limestone in the hole. For example, a six-inch hole treated with 300 gallons of 50 percent commercial HC1 and 50 percent water will be enlarged to 2.56 feet, a 5 fold increase in diameter.[1] This increase in size of hole of 5 times will increase the capacity of the well to produce, as shown in the following radial flow formula derived by Wyckoff, Botset, and Muskat of the Gulf Company research laboratories.

$$Q = \frac{2\pi TK(P_1-P_2)}{U \operatorname{Log}_e \frac{r_1}{r_2}}$$

Q = rate of flow in cc. per second
U = viscosity in centipoises
r_1 = diameter of drainage area in cm.
r_2 = diameter of the well in cm.
T = thickness of the sand in cm.
P_1 = reservoir pressure in atmospheres
P_2 = bottom-hole pressure in atmospheres

According to this equation, increasing the size of the hole 5 times increases production 33 percent. Actual experiments carried out in our laboratory of the rate of flow at constant pressure, viscosity, and thick-

Presented before the Southwestern Division of the American Association of Petroleum Geologists at San Antonio, Texas, November 6, 1937.

[1] Calculations by H. K. Livingston, Shell Research Fellow, The University of Texas.

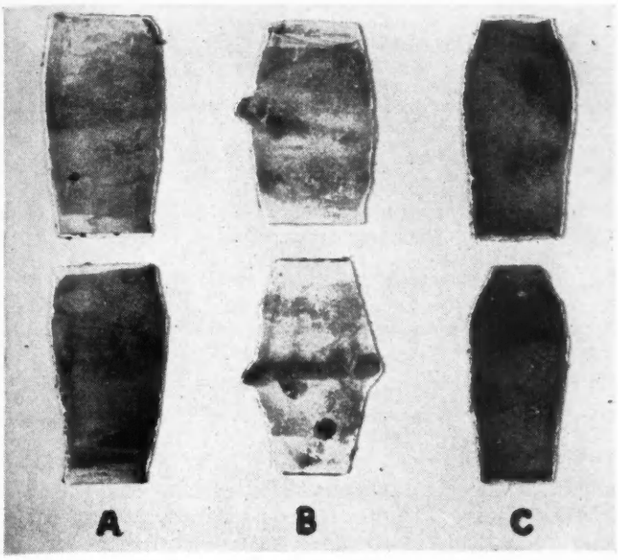


FIGURE 1

Photographs showing shape of enlargement of holes in cores after acid treatment.

A. Edwards limestone.

B. Austin Chalk.

C. Permian limestone from west Texas.

The diameter of the original hole in the core was ¼ inch. After treatment with acid under 100 pounds per square inch pressure, the diameter was approximately 1.7 inch, or an enlargement of about 3½ times.

Note that the effect of the acid was to enlarge the hole. In A the chalk is pitted somewhat.

ness of sand have shown[2] that where the hole in the sand rock was increased 4 times the production was increased 145 percent.

The effect of enlargement is to increase enormously the number of passageways through which fluids can escape into the well. (See Figure 2.)

If the central hole in the above drainage pattern is increased, say 20 times from the size of the inner circle to the size of the outer circle, the number of drainage lines that upen up into the well are greatly increased. Hence, the increase in the size of a hole by acid treatment must necessarily increase the flow of fluid, both oil and water, which is coming into the well.

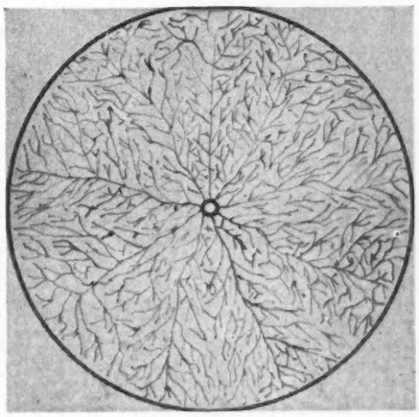
Method of Introducing the Acid Into the Oil-Producing Zone

It is now generally recognized that, since acid treatment often increases the production of water in oil wells making some water, as much as, if not more than, it increases the production of oil, the treatment should be directed so as to give every advantage to the oil-producing zone and to reduce or to plug off as much as possible the flow from the water-producing zone. The treatment of Edwards limestone wells along the fault line, which are making a high ratio of water, is at present carried out with this principle fully in mind.[3]

The tubing of the well is removed; a perforated nipple followed by a plug is made up on its lower end; the tubing is replaced in the hole with the bottom of the perforated nipple set below the casing shoe at the exact point that marks the bottom of the section of limestone which is to be treated. The well is then filled with water or oil to build up a static head on the formation, then a rubber plug, shaped like a rubber in a tubing swab, is introduced into the tubing. A thin slurry of cement is then run into the tubing until amount calculated to fill the hole up to, and a little above, the perforations in the perforated nipple has been introduced. The cement slurry is followed by another tubing plug and water, until all the cement has been delivered into the hole. The pump circulation is reversed through the casing and up through the tubing until all excess cement above the perforations in the nipple has been blown out through the tubing head. Then the tubing valves are closed, and a pressure of about 500 pounds (bottom-hole pressure of about 900 pounds) is placed on the cement for a few minutes. Then about 335 gallons of acid are introduced into the tubing before the cement has had time to set and the acid allowed to enter the formation above the cement. Reaction between the acid and formation takes place quickly. At first pressure builds up on the casing head, the valves of which are closed. However, as the incrustations on the face of the oil formation are dissolved away, some paraffin is cut out, and the hole is enlarged, so that many new, clean passageways are opened up into the limestone. The formation takes the liquid in many places more readily, and in some places a vacuum is set up at the tubing head, so that in most tests in the Edwards formation no pressure beyond that of the hydrostatic head of a water column, which is run in on top of the acid, is necessary to force the treating fluid into the limestone. As soon as the formation has received all the fluid the tubing is filled with clean water, the well is closed in and allowed to stand about eight or twelve hours, then pumped out or swabbed out through the tubing and put on the pump.

FIGURE 2

Diagram of a hypothetical drainage area around a well.



The procedure in treating chalk wells is similar to that of treating Edwards limestone wells, except that larger quantities of acid are used (1000 to 5000 gallons). Since most chalk wells have low permeability and do not produce much water, running of the cement slurry is omitted, and higher pressures are needed to force the spent acid back into the formation in order to make contact between the chalk and fresh acid

[2] Plummer, F. B., and Woodward, J. S., Experiments on Flow of Fluids Through Sand: Trans. A.I.M.E., Vol. 123, pp. 120-132, 1937.

[3] The writer is indebted to Jimmy Posgate of Humble Oil & Refining Company, C. G. Worthy of Magnolia Petroleum Company, Joe Dawson of Gulf Oil Corporation, O. K. Wells of Chemical Process Company, and C. Y. Young of Dow Chemical Company for recent information on methods and results of acid treatment given in this paper.

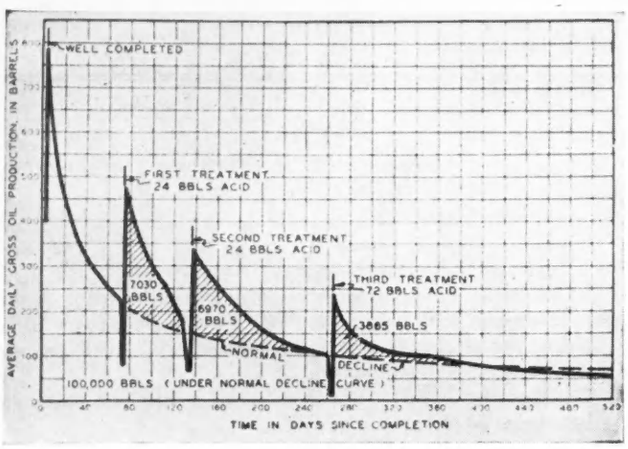


FIGURE 3

Graph showing result of successive acid treatment of a Michigan well producing from Dundee limestone. (After Covell.)

coming down the tubing. Results of laboratory experiments on treating of chalk cores indicated that, because of the plugging of the fine interspaces in the chalk by the colloidal residue resulting from chalk solution by acid, it might be preferable to use small quantities of acid, to pump the spent acid out through the tubing quickly as soon as the reaction ceases, and to follow by successive small treatments increasing the quantity a little each time until the quantity of acid previously determined upon had been introduced, instead of forcing the 1000 to 3000 barrels of spent fluid into the tight formation under relatively high pressure. Experiments on successive small treatments in the Dundee limestone[4] in Michigan have proved this method of repeated treatment in Michigan successful. (See Figure 3.)

Results of Acid Treatment of Oil Wells

Since the introduction of the technique of introducing cement ahead of the acid and of treating only the upper or oil zone in the limestone with comparatively small doses of acid, acid treatment of the Edwards limestone has been quite successful. The Humble Oil Company in the Salt Flats field has treated about 60 wells with an average increase of about 100 percent in oil production per well. The increase holds up for about ten months, then settles to a 25 percent to 35 percent increase. The water production is also increased but not so much proportionately as the oil, so that treatment improves the oil-water ratio in most wells for at least a 10-month period.

The Magnolia Petroleum Company in the Luling field has treated about 70 wells. The results, although not quite so good as those at Salt Flats, have proved successful in 85 percent of the attempts, and the Magnolia Company is planning to continue the acid-treatment process.

Treatment of the Dale limestone in the Lockhart district has also proved successful, where increases in oil production of 150 percent have been recorded in a number of wells. Results in treatment of the chalk do not always show so high a percentage increase in fluid produced as that of the Edwards, yet the process has saved a number of wells from failure, and the increase in production lasts longer. Many wells that produce only ½ to 3 barrels when treated have resulted in fair producers. The results in the Banyon field have been especially noteworthy, The chalk there is granular, almost finely oolitic, and exceedingly tight for an oil sand. The wells, according to Joe Dawson, produced normally on the average, 12,400 barrels for 135 wells monthly. After treatment with 3000 to 5000 gallons of acid and after several months of elapsed time, the production is now 65,000 barrels for the 135 wells monthly, an increase of 424 percent.

Tables 1 and 2 compiled from data on acid treatment in files at Austin

TABLE 1
Tabulation of Data from Different Districts
Average Results in Typical Field

FIELD	Formation	Amount Acid Used per Well	Increase in Production for 30-Day Period
Zwolle, La.	Chalk	1000 gallons	100% (1)
Zwolle, La.	Chalk	1000 gallons	282% (2)
Zwolle, La.	Chalk	1000 gallons	286% (3)
Breckenridge, Texas	Marble Falls ls.	1000 gallons	Av. increase 10 days after 433% (4)
Yates, Texas	Permian ls.	1000 gallons	Approx. 100% (4)
Big Lake, Texas	Permian ls.	1000 gallons	Approx. 200% (5)

(1) 29 wells out of 62 wells that showed an increase (authority, R. E. Heithecker, U. S. Bur. Mines, R. I. 3251).

(2) 42 wells out of 62 (authority, R. E. Heithecker); 55% of the wells showed a favorable increase; 45% showed little if any result.

(3) Pelican Nat. Gas Co., La. Long Leaf Lumber Co., Well No. 16 (authority H. K. Shearer).

(4) Average increase of 171 wells out of 180 treated (authority, B. A. Cunningham, Jr., Simms Oil Co., A.P.I. Paper 9019 D).

(5) Average increase of 3 wells out of 3 treated (authority, B. A. Cunningham, Jr., Simms Oil Company).

TABLE 2
Results in Individual Wells

COMPANY	Well	Field	Formation	PRODUCTION IN BARRELS Before	After	Percent Increase
Straube & Straube	Miller No. 1	Darst Cr.	Edwards	25	95	64
Weinert, H. H.	Miller No. 1	Darst Cr.	Edwards	25	100	75
Lido Oil Co.	Waggoner P-1	Wilbarger	Penn. ls.	2	42	95
Lido Oil Co.	Waggoner 9	Wilbarger	Penn. ls.	4	40	90
Landreth	Univ. A-1	Pecos	Permian ls.	4	70	94
Landreth	Univ. E-1	Pecos	Permian ls.	25	100	75
Arkansas Fuel	Univ. A-1	Pecos	Permian ls.	30	120	75
Pure Oil Co.	Hughes 4	Upton	Permian ls.	10	171	94
Snowden & McSweeney	Hughes 3	Upton	Permian ls.	15	360	95
Texon	Sherk 2	Upton	Permian ls.	5	143	97
Stanolind	State 29	Lea Co.	Permian ls.	42	222	81
Continental	State A-11	Lea Co.	Permian ls.	18	144	87
Texas Co.	State C-4	Lea Co.	Permian ls.	9,510	19,865	53

[4] Covell, K. A., "Development in Eastern Production Practice," A.P.I., Pittsburgh Meeting, May 25, 1934.

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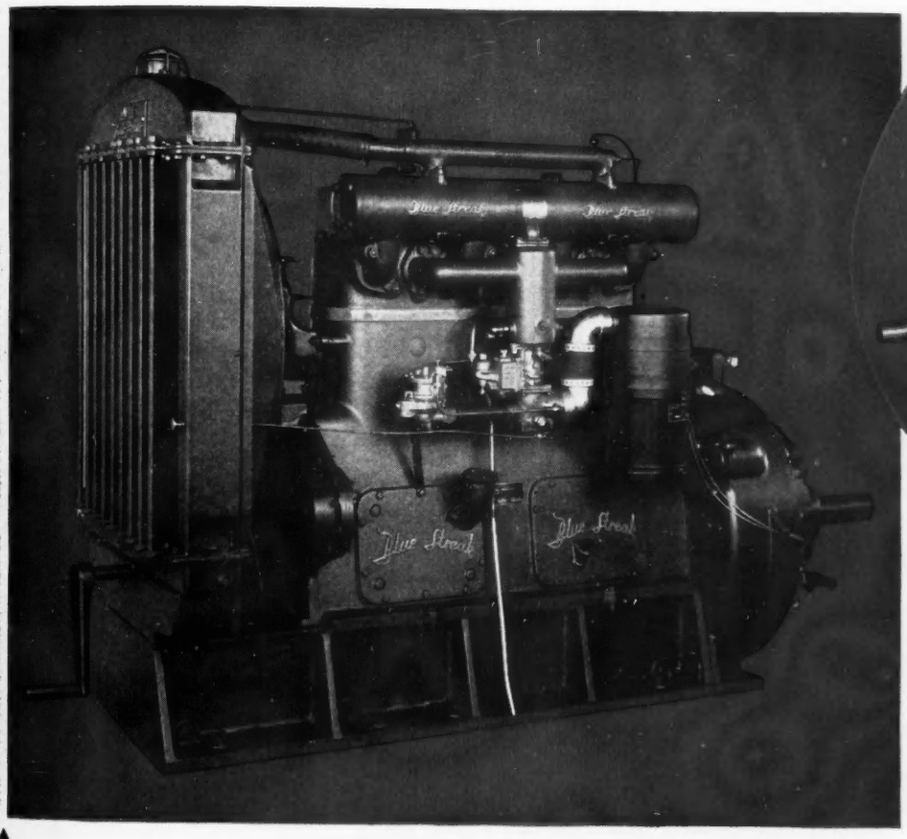
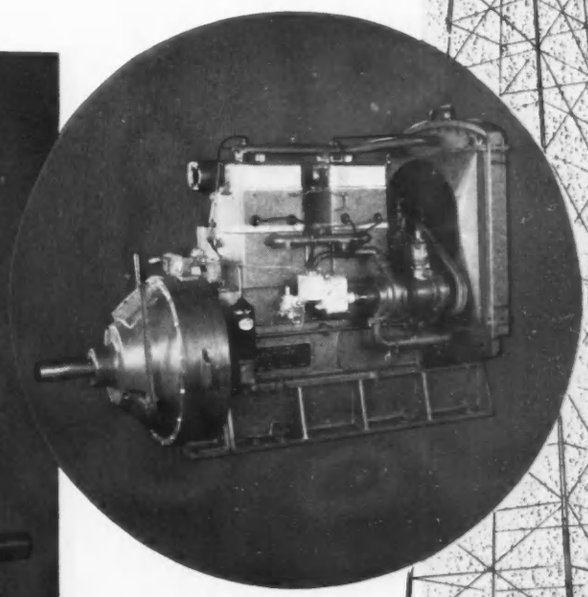
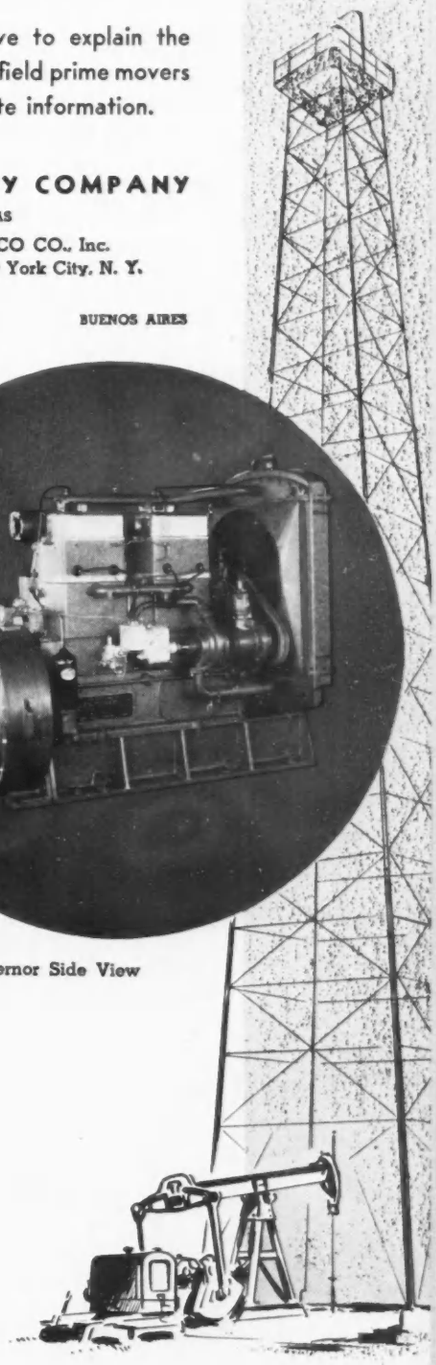


Climax Blue Streak Model N4B Engine
Manifold Side View



Governor Side View



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shows some results achieved in different geologic formations.

Discussion of Results

An inspection of the results of acid treatment of oil wells in South Texas shows that the most important single item in the success or failure of the method is regulating the process in such a manner as to increase the flow of oil without increasing too much the production of water, since, as production of the mixture continues, the oil declines while the increase in water holds more or less steady.

Two theories of water distribution in an oil sand.—Two conceptions are current among petroleum engineers concerning the distribution of oil and water in an oil sand. One is that during the production life of a well, bottom or edge water gradually encroaches upward driving the oil ahead and above it, so that during the old-age period of a well, oil occupies the upper, say 1/10, of the sand, and water the lower 9/10 with a more or less level interface between. Other engineers think that the water encroaches upward around the periphery of the well in old age, even during slow withdrawal, in the form of a cone, and that, once the periphery of a formation around a well is saturated with water, only water will pass through the water-filled channels and that oil, because of the lower surface tension, in order to get into the well, must pass upward around the cone and enter in the short 1/10 or 1/20 oil-bearing zone above the cone. (See Figure 4). In fine-grained formations this latter, or cone theory, has considerable support, and it appears that much more oil may exist at some distance back from a well than right around the periphery. Hence, theoretically, in formations where this condition exists, two procedures are possible: (1) The introduction into the water in the formation some chemical that will reduce the surface tension of the water below that of oil, so the cone can not form. This method has been tried out so far without definite success. (2) Another procedure would be to plug up all of the hole below the casing with cement then with a special whip stock and milling tool not yet devised perforate the casing and redrill an inclined hole at an angle of 45° and for a distance of 50 to 100 feet back from the well to encounter the top of the oil left in the sand. This method, as far as I know, has not yet been tried.

Acid treating through gun perforated casing.—Recently, however, experiments have been undertaken in cementing up the bottom of a well to above the casing shoe, gun perforating the casing some little distance above the shoe, then acid treating the formation through the gun perforations. The idea is that some oil may have been cased off behind the casing in the early more or less hurried drilling campaigns or that the oil horizon due to encroachment of water and reduction of high gas pressure at first prevalent in the cap rock may have been rising during later years above its original position. Another factor in some wells may contribute to the success of this new program. The limestones adjacent to faults are cut by joint crevices, which are inclined at angles of 45° to 65° to the vertical. Cores from the Edwards limestone indicate that not all these cracks and crevices are filled with calcite or other cementing material. If the gun perforations plus the enlargement and extension of the perforations by acid penetrate into some of these inclined joint crevices, the effect may possibly be the same as drilling a small inclined hole into the oil beyond the water cone. The idea of producing oil through joint fractures into perforations may be fantastic, but at least is an interesting conception, and whatever the source of the oil behind the casing the practical results so far achieved are encouraging, and they increase the possible application of the process of acid treatment.

Importance of Expert Study

This brief discussion of the subject of acid treatment, haphazard and inadequate as it is, nevertheless indicates clearly that each field and indeed each separate well is a problem in itself and one that demands and should have the fullest cooperation of the geologist who knows the formations, the engineer who knows the physical chemistry of reservoirs and reservoir waters, and last, but not least, the practical, experienced operator who can carry out skillfully methods that the technologist suggests. With such a combination the process of acid treatment will do much to increase the recovery of oil from most producing limestone formations in South Texas.

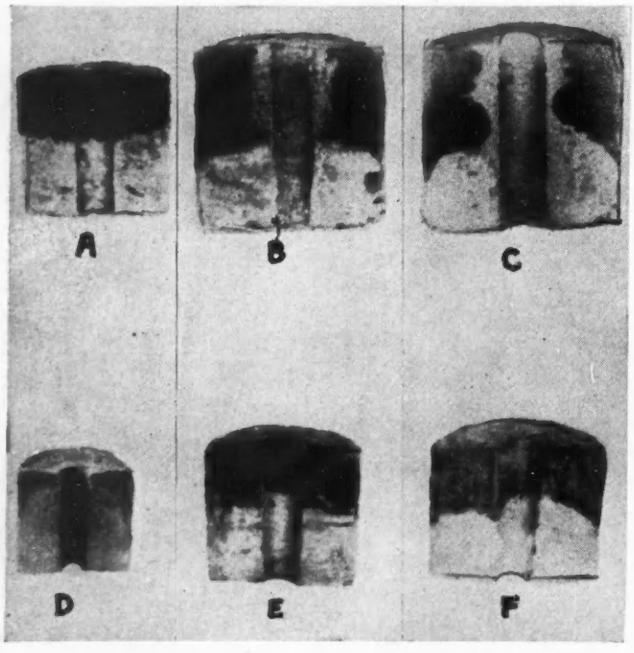

FIGURE 4

Photographs of cones formed around a hole in a producing core. The black portion represents the oil; the white portion, the water.

A. Original position of oil and water in the core.

B. Position after slow production of water and oil through a tubing extending down to the bottom of the core.

C. A similar core after standing for some time with oil and water in the hole. Note that the water has penetrated back into the oil sand and displaced the oil.

D. A cone formed by rapid production in a somewhat coarser sand than A. and B.

E. and F. Cores in which the water cone has just started to form.

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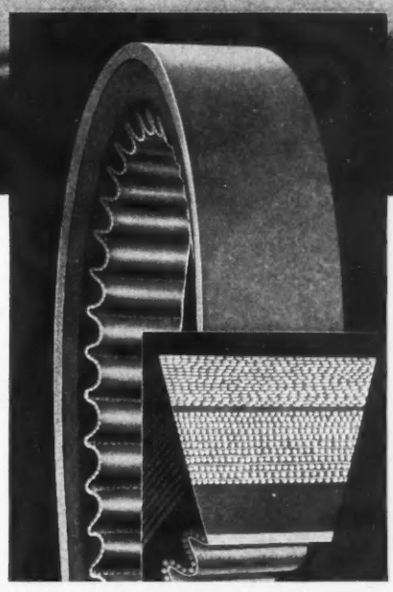

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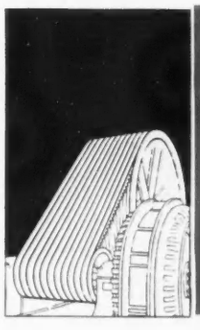

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Hardening of Mud Sheaths

IN CONTACT WITH OIL, AND A SUGGESTED METHOD FOR MINIMIZING THEIR SEALING EFFECT IN OIL WELLS

By C. P. BOWIE, Supervising Engineer,
United States Bureau of Mines, San Francisco, Calif.

FOR years many oil producers have believed that often low-pressure oil- and gas-bearing strata have been overlooked in fields where the rotary system of drilling has been used. Collom[3] gave as a reason for this condition that because the mud fluid was thick, the oil or gas stratum was plastered and sealed as the tools passed through it and no oil showed at the surface. Although this observation was made 15 years ago, it may often still be true notwithstanding modern developments in coring and electrical logging.

Operators have believed, also, that mud fluid does not solidify behind the casing. Lewis and McMurray[4] stated: "All the evidence obtainable from practical experience points to the fact that the mud fluid properly mixed and employed does not solidify behind the casing, even in deep wells and after long periods."

This statement may be true where the mud fluid is in contact with water-bearing formations, but the author believes that other conditions hold where the mud fluid is dehydrated, as it can be by contact with crude oil.

In the fall of 1934, while experimenting with mud fluid in the San Francisco laboratory of the Bureau of Mines, the author found that drilling mud apparently solidifies after being immersed in crude oil for a relatively short time.

Laboratory observations made in connection with this work indicate that where wells have been drilled through oil-producing formations of low differential pressure, a sheath of mud cake has been formed between the casing and the surface of the formation, which after a time becomes as hard and as impervious to the passage of oil as the cap rock that holds the oil and gas in place in the structure. Actually, the clay in the drilling fluid, which later became a mud cake behind the casing, was a pulverized part of that cap rock or some similar material.

After "drilling in" oil wells with mud fluid, operators often are disappointed with the relatively small production of the well as compared with the favorable oil "showings" in cores. The mud sheath that has been deposited on the wall of the well opposite the oil- and gas-bearing formation may account for the smaller production than anticipated, as this sheath will inhibit the flow of oil and gas from the formation into the well. For this reason oil frequently is used as a circulating fluid after the well has been drilled to within a few feet of an oil stratum.

However, certain problems arise incident to the use of oil as a drilling fluid. Its velocity and viscosity during circulation should be great enough to remove the cuttings to the surface. A mud fluid depends largely on its colloidal properties for removing the cuttings. The oil used for circulation may be viscous enough to carry the cuttings to the surface before an oil stratum has been encountered. However, the viscosity will be reduced if a zone is penetrated that produces an oil of lower viscosity. This reduction may be sufficient to prevent satisfactory removal of the cuttings.

Jensen[5] in discussing "drilling in" with oil mentions a well completed in California during 1936 where about 18,000 barrels of oil were used as a drilling fluid. Circulation to the surface was not reestablished in drilling the last 800 feet of the hole. The drill cuttings apparently went into cavities in the formations.

In discussing the controlled-pressure method of drilling where oil or a mixture of oil and gas is used as a circulating medium instead of mud and where the flow from the well is controlled by the use of special equipment while drilling is in progress, Ross[6] states: "Although the controlled-pressure method of completing wells has been found applicable to fields where the underground strata are relatively hard and capable of standing up in open hole, its application to areas where the hole penetrates great thicknesses of unconsolidated and loosely-cemented formations is still questionable."

Various other methods have been used to complete oil wells; these include reaming, swabbing, shooting, and chemical treatment. Any method will have some limitations. The author believes that in some applications the method suggested in this paper may have certain advantages not inherent in the other methods.

Abstracted from the United States Bureau of Mines Report of Investigation No. 3354.

Mud Hardening Observations and Theory

To verify the apparent finding that mud fluid solidifies when in contact with crude oil, clay from Coalinga, Calif., like that used in Kettleman Hills oil field, was mixed with enough water to form a plaster that would adhere to the walls of a cylinder about 4 inches in diameter by 6 inches in length. The cylinder was made from 20-

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mesh stamp-mill battery screen. The mud was plastered on the inside wall to a thickness of ⅜ inch. The cylinder with the mud cake then was submerged in a jar filled with 39.2° A.P.I. crude oil from the Belridge (Calif.) field. A watch glass was placed on top of the jar, thereby retarding evaporation of the lighter portions of the oil. As the time of submergence increased, the A.P.I. gravity of the oil decreased. This arrangement showed the effect of oil of varying gravity on the mud cake.

After being immersed in the oil for 10 days, the mud cake showed signs of solidifying; and after being in the oil 22 months, it attained a hardness about equal to that of a brittle shale. When the cake was dropped from the laboratory bench to the floor the sound of the impact was equivalent to that made by an equal amount of shale, and the mud cake was so solid that it did not fracture. Moreover, when the cake was placed in a test tube of water it would not disperse as would a clay suspension when shaken.

Other muds, ranging in consistency from a soft plaster to a 78.3-pound-per-cubic-foot drilling mud, were mixed from Coalinga (Calif.) clay and Mojave (Calif.) clay. Each of these muds was poured into a flat-bottom flask of ½ to 3 liters capacity. The bottom of each flask was covered to a depth of ½ inch with the mud sample. These containers then were filled to within 1 inch of their tops with 39.5° A.P.I. Kettleman (Calif.) crude oil and sealed.

The stiffer muds showed signs of solidifying in 10 days. In 10 months, even when the flasks were turned on their sides so that the disks of mud stood on edge, no mud flow took place. The cakes appeared to have the hardness of plaster of paris that has set. The sample of 78.3-pound drilling mud was placed on the bottom of a 3-liter flask. After standing over night the mud was covered with ⅛ inch of "free" water. Most of this water was not visible after a few days had passed.

Mud cakes 1 inch in diameter by ⅜ inch in thickness, prepared by adding just enough water to wet the dry clay and then molding under a pressure of 100 pounds per square inch, after being immersed in oil for 30 days, had the approximate hardness of a similar cake dried in air.

In the ceramics industry much research has been performed and numerous theories developed to explain the plastic properties and solidification of clays. The theories will not be discussed in this paper, but it is believed generally that clay mixed with the proper amount of water and allowed to dry "sets" or becomes hard due to the action of water on the colloidal parts of the clay and the subsequent removal of the water.

According to Wilson,[7] a concept associated with the plasticity of clay is: "On drying or elimination of the water a coherent brittle mass is produced, stronger than the plastic clay."

Clays mixed with water to form a drilling mud apparently harden when immersed in oil because enough of the water is removed by the oil to cause the clay to "set." Such clays (mud cakes) therefore are akin to air-dried clays, except that air-dried clays are capable of being returned to a clay suspension on the addition of water while oil-dried clays are not, or certainly not readily so. Lockwood[8] found that the water content of 36.5° B. oil increased 6 percent after being in contact with water for 13 days.

Possibly the fact that plastic clays harden when in contact with crude oil has an important bearing on the accumulation of oil in underground strata.

Suggested Treatment of Mud Fluid

Difficulties may arise due to the solidification of mud behind the casing opposite an oil- and gas-bearing formation or due to the adherence of a mud sheath to the wall of a producing formation. To correct these conditions the author suggests that a suitable material soluble in crude oil and insoluble in water might be added to the mud fluid before the potentially productive zones are penetrated. This treatment should render the sheath permeable to oil. Of course, the material added must not interfere with the normal functions of the mud and should remain in suspension during circulation.

If several oil- and gas-bearing strata are penetrated during the course of drilling the well, it might be advisable to use a treated mud fluid throughout. Then, after "plugging back" it would be possible to obtain production from the upper low-pressure zones after the deeper, more prolific zones have been exhausted, because the sheath opposite the oil-bearing strata would be permeable to oil.

Materials Considered for Mud Treatment

Apparently various substances have required properties, but all of them may not have practical value. Asphalts, naturally occurring and manufactured, and metallic soap, such as calcium stearate, are soluble or partly soluble in hydrocarbons and virtually insoluble in water; however, the limited experimental work the author has done with these materials yielded few favorable results. The gum-forming latex of plant life, such as crude rubber, rosin, and chicle, seem to be the most desirable, especially those that have the property of swelling before going into solution. The swelling shatters the mud cake, opening channels in it, and when the added material has gone into solution a free passage is provided for the oil and gas.

Crude rubber obtained in the form known to the trade as "smoked sheet" has given the best results in the laboratory experimental work. Reclaimed rubber, such as that derived from old automobile tires, will not be suitable as it has been vulcanized. The vulcanizing process very materially reduces the swelling properties as well as the solubility. Para crude and Malay crude rubber have been used with about equal success. These grades are dark amber in color and have a specific gravity of 0.90 to 0.95. Apparently they are readily soluble in hydrocarbons and insoluble in water; both distilled water and that having a relatively high mineral content, such as an oil-field subsurface water. They swell slightly when in contact with water after a long period of time. When in contact with gasoline for a few hours they swell enormously (13 volumes or more) and then pass slowly into a pseudo solution.

According to Webber,[9] no definite temperature can be given for the melting point of rubber. With rising temperature it grows softer and stickier, eventually approaching a fluid state at between 170° and 180°C. (338° and 356°F.)

The best results with rubber have been obtained when using strips about 1/16 inch in diameter and ½ inch in length. The shredded rubber was mixed with the drilling mud in proportions ranging from 5 to 10 percent by weight of the dry clay and rubber.

The specific gravity of a 78-

pound-per-cubic-foot drilling fluid made from Mojave (Calif.) clay is 1.25. The specific gravity of the drill cuttings carried to the surface by such a mud is approximately 2.6. Laboratory experiments to be described show that where the crude rubber is thoroughly mixed with a suitable drilling mud the specific gravity of the rubber is near enough to the specific gravity of the drilling fluid to insure uniform distribution of the rubber particles throughout the fluid during circulation. Rubber is tenacious and probably would retain its size and shape after long periods of circulation in mud fluids containing abrasive drill cuttings. The rubber should separate in the ditches because of its lower specific gravity and more rapid rate of flow than the drilling mud. If it does not separate readily, probably the use of a properly adjusted screen will solve the problem. The cuttings should separate from the treated mud in the usual manner as they do from untreated mud.

Some apparently favorable results in the laboratory in rendering the mud cake permeable to oil have been obtained by using common rosin in granular form. This material is derived from the distillation of turpentine oil from crude turpentine. It is usually dark amber, has a specific gravity of about 1.1, and a melting point of 100° to 140°C. (212° to 284°F.). It is insoluble in water and readily soluble in hydrocarbons; however, it lacks the swelling properties afforded by rubber.

Chicle is another substance from which some favorable results have been obtained. This material is used extensively in the manufacture of chewing gum. It is the latex product of one and perhaps more[10] species of the genus Achras (Sapotaceae). This plant grows wild and also is cultivated extensively in various countries in Central America and the tropical part of South America. Chicle is only partly soluble in water but readily soluble in hydrocarbons.

P. L. Becker, vice president, American Chicle Company, has informed the author that the specific gravity of chicle when dried is about 0.975; before drying it is slightly greater than 1.0. It has no definite melting point but softens rather rapidly within the range of 83° to 87°C. (181° to 188°F.). Probably 85°C. (185°F.) could be taken as its melting point. It is a very complex mixture of resins, gutta (rubber), carbohydrates, mineral matter, and a small amount of proteids. There is no single solvent that will dissolve it completely. The resins and gutta are soluble in hydrocarbons and the carbohydrates in water. There is usually 3 to 5 percent mineral matter insoluble in all ordinary solvent. The approximate composition of chicle is as follows:

	Percent
Gutta	12.5
Resins	62.5
Carbohydrates	15.0
Ash	10.0

As has been stated, asphalt also seems to have possibilities. Grades A and B of the California product in granular form have been tried. Grade A, according to A.S.T.M. standard test methods, has a penetration of 0 to 5, melts at 277°F., and is 53 percent soluble in 86° A.P.I. petroleum ether. Grade B has a penetration of 4 to 10, melts at 159°F., and is 65 percent soluble in 86° A.P.I. petroleum ether. This material lacks swelling qualities.

Metallic soaps also are to be considered. Zinc stearate and calcium stearate have been tried in both powdered and granular form. Like asphalt, these materials lack swelling properties. So far, laboratory tests with them have given no favorable results.

Conclusions

Although it is too much to hope that laboratory experiments will ever accurately reproduce underground oil-well conditions, there seems to be no doubt that drilling mud will solidify when in quiescent contact with crude oil. The time required for such solidification to take place and the degree of hardening attained will depend greatly on the amount of moisture in the mud cake and the amount and type of the oil that is contacted.

The author believes that in many producing fields and in "wildcat" wells low-pressure oil- and gas-bearing formations have been drilled through without being detected. Because the mud sheath on the wall of the well has solidified, the formations are now as securely sealed as though they had never been penetrated. He also believes that many prolific oil sands are yielding only a small part of their oil as they have become clogged with a solidified mud cake on the face of the sand.

In the past some operators tended to have their drillers "make hole" too rapidly and neglect testing formations that may have possibilities. More careful testing of each formation as the drilling proceeds and the use of a mud fluid properly processed to permit more of the oil and gas encountered to flow freely into the well seems desirable in both proved and "wildcat" territory.

The use of processed mud fluid in "bringing in" a well should insure a maximum production of oil because the treat material will shatter the mud sheath if it tends to harden. If a proper amount of treat material is used the mud sheath should be permeable to oil, perhaps as permeable as the oil-bearing formation.

The cost of processing the mud fluid should not be excessive. If several oil- and gas-bearing strata are encountered during the course of drilling, it should be profitable to use a treated mud throughout. When the deeper zones have been exhausted or found nonproductive it will be possible to seal them by "plugging back" and obtain the production from the upper low-pressure zones, because the mud sheath opposite the oil-bearing strata will be permeable.

It should be remembered that this report is based on laboratory experimental work. The practicability of the proposed method of minimizing the sealing effect of mud sheaths in an oil well has not yet been tested in the field; neither has the practicability of circulating a mud treated with such a material as short strips of crude rubber been demonstrated. Operators with whom field application of the process has been discussed are of the opinion that a definite technique covering its application will have to be established. They do not, however, foresee insurmountable difficulties.

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[9] Webber, Lother E., The Chemistry of Rubber Manufacture; Charles Griffin & Co., Ltd., 1926, p. 57.

[10] Laan, Joseph W. Van der, Production of Gutta-Percha, Balata, Chicle, and Allied Gums; U. S. Bureau of Foreign and Domestic Commerce Trade Promotion Series 41, 1927, p. 49.

Curbing Pump Plunger Packing Corrosion

By CHARLES C. LYNDE

THE intermittent handling of crudes carrying more than a trace of water, especially if there be more than a trace of sulphur or salt in the oil, imposes an additional care in the maintenance of marine terminal pumping stations which is rarely met in main line stations where pumping is practically continuous over long periods.

So marked is this difference that many waterfront chief engineers determine the previous experience of a new man by whether or not he removes the packing from the pump plungers upon the completion of a run to a tanker, if there be no loading posted for within the next 24 or 48 hours. For, as experience has proven, if plungers be left in the packing for some time—or even for a short period with some crudes—there is a definite zone of corrosion visible on the polished metal of the plunger. This corrosion, first apparent as discoloration of the otherwise shiny plunger, rapidly attacks the metal, and forms pits and rough areas which, once pumping is resumed, rapidly wear away the packing.

Slacking Off Stuffing Box Will Not Help

Slacking off of the nuts on the stuffing box is but little help in controlling the localized corrosion, as enough water seems to be retained by the interstices of the packing material to set up the damaging action. Recognizing this fact, it is the rule in many deep water pump stations that packing must be removed from the glands and the plunger wiped dry and then protected by a coating of oil or grease against the next scheduled run. Then, with advance warning, the packing can be replaced in time to begin the next loading. This plan, though protecting the plungers against corrosion, results in considerable loss of packing, as the usual type of flax or fibrous packing tends to swell after being removed from the pump, and is distorted upon being replaced. Cupped, or sea-ring types of packing lend themselves more readily to frequent handling into and out of glands, but tend to harden and check if or when exposed to the air after being under pressure in certain types of crude.

Many attempts have been made to protect the plunger against this trouble, such as loosening the stuffing box and then barring over the pump enough to allow a previously greased section of the plunger to be brought under the packing. As most of the lubricant or protecting medium is wiped off, even by packing held but loosely in the gland, the protection obtained is questionable.

One Carribbean terminal, loading an average of seven tankers a month, experimented to find some effective and simple method of protecting the plungers with the packing intact. The expedient of removing the packing, greasing it well, and immediately replacing it was tried, and found helpful, though the grease failed to give the protection expected of it, and did not prevent the formation of a rust line at the edge of the wiping gland ring.

Melted Wax Does the Trick

Finally, after trying several types of heavy oil and grease with but indifferent results, the packing on one pump was wiped dry and coated with melted paraffin wax, such as is used by housewives for sealing preserves. Neither salt air nor corrosive agents in the crude seemed to affect the plungers so protected, as they came out as bright and smooth after a shutdown period as they were when the pumping was completed.

Insert Hot Wax with Grease Gun

Having found a protecting material which was efficient and economical, it remained to apply it quickly and with a minimum of trouble. By tapping through the pump body and into the liner at a point about midway of the seven rings of packing when compressed for normal load, and inserting a high pressure grease gun there, it was found that melted paraffin could be forced into the stuffing box space, displacing most of the crude and effectively sealing the plunger surface. Using a screw-type pressure gun, kept in boiling water until time for use, the hot paraffin would be forced in until it appeared around the wiper gland packing ring in quantities sufficient to form a seal against atmospheric condensation or salt-air corrosion at that point.

Starting up on the next delivery simply ignored the presence of the paraffin which, as pumping continued, gradually worked off the packing and was carried away in the stream of oil. For a seven-ring gland on a five-inch plunger one pound of paraffin was found to be ample to give all the protection desired against the troublesome "packing blister" formerly evident after each shutdown.

The paraffin treatment proved so effective on the plunger pumps that it was extended to the centrifugals also, a pressure gun fitting being tapped into the lubricant lines to each gland on these pumps as well. Not only was corrosion halted, but packing life was more than doubled by the practice as above outlined.

MEN IN THE INDUSTRY'S NEWS

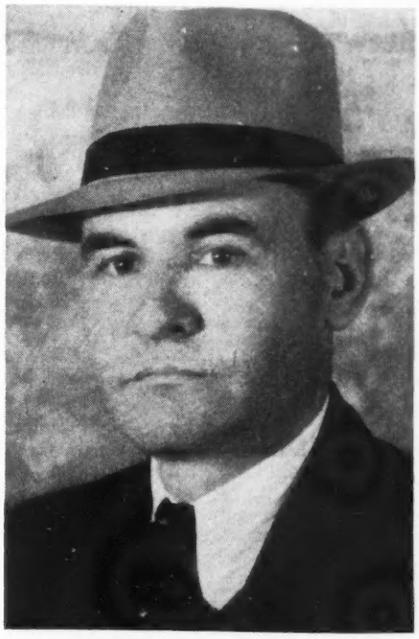
VAN D. BENNETT RESIGNS AS CHIEF PETROLEUM ENGINEER FOR BRITISH AMERICAN OIL PRODUCING COMPANY

JOHN A. McCUTCHIN SUCCEEDS BENNETT, WHO IS TO JOIN THE SUNRAY OIL COMPANY

BRITISH American Oil Producing Company has named John A. McCutchin chief petroleum engineer, succeeding Van D. Bennett, who resigned to become chief consulting engineer for Sunray Oil Company. Both men are at present located in Tulsa and will continue to reside there.

The territory to be covered by Bennett will include Oklahoma, Kansas, Texas and California. Bennett, a native of Indiana, was raised in Kansas, attending school there. After teaching himself engineering through the medium of correspondence and post-graduate courses, he went to New York for two years. Upon his return, he went to work for Derby Oil Company and came to Tulsa with British American Oil Producing Company in 1936 as production engineer. He is also chairman of the Mid-Continent district, The American Petroleum Institute.

McCutchin, who joined British American Oil Producing Company in November as petroleum engineer, is a graduate of the University of Oklahoma, where he received a B. S. degree in engineering geology and an M .S. degree in engineering. After spending some time at production work in East Texas fields, he joined Shell Petroleum Corporation in 1933 as district exploitation engineer at Seminole, and served in the same capacity at McPherson, Kansas, and in the Texas Panhandle. McCutchin is a member of the American Association of Petroleum Geologists and the American Institute of Mining and Metallurgical Engineers.



JOHN A. McCUTCHIN

VAN D. BENNETT

RAY STEVENS, scout for Shell Petroleum Corporation in Mississippi, was a Houston visitor last week.

GEORGE B. McCAMEY, president of Cordova-Union Oil Corporation, and co-discoverer of the West Texas field bearing his name, provided Christmas dinner and tobacco for 26 veteran drillers and tool dressers at a Fort Worth hotel. McCamey worked on a cable tool rig in former years.

ADDISON YOUNG, West Texas district geologist for the Landreth Production Corporation with headquarters at Midland, accompanied by his wife, journeyed to Washington, D.C., where they formerly resided, to spend the Christmas holidays.

R. H. EVANS, general manager of the Socony-Vacuum Oil interests in central Europe, has been awarded the "Offizierskreuz des Oesterreichischen Verdienstordens" (Officers Cross of Order of Merit) by the Austrian government.

IONEL GARDESCU, Ph. D., Houston, consulting petroleum engineer and geologist, expects to return shortly after January 1 from Tampico and Mexico City.

BOBBY MANZIEL, Texas operator whose first venture in 1931 was financed by Jack Dempsey, former world's heavyweight boxing champion, was married December 19 to Miss Dorothy Nolan, of Alexandria, Louisiana. The Manziels were to be guests of Jack Dempsey and his wife in New York until after Christmas, after which they will honeymoon in Havana. They expect to return to Manziel's home in Gladewater, Texas, about the middle of January.

DR. R. A. SMITH, Michigan state geologist, led an open forum discussion on the origin and accumulation of petroleum in Michigan before members of the Michigan Geological Society in Bridgeport last week. Other club members who participated in the discussion included W. A. Thomas, McClanahan Oil Company; H. D. Criden, Muskegon Development Company; F. Hake, Gulf Refining Company, and R. B. Newcomb, president of the society.

DR. G. S. HUME, of the Canadian geological survey, addressing a group of financial leaders in Montreal recently, said that late development in the Turner Valley area has resulted in a field of major importance, capable of supplying the entire prairie provinces when carrying facilities have been provided. He said that there was possibility of further extension of the proven area, now three miles long and approximately three-quarters of a mile wide, to the north, south and west.

A. L. CASHMAN, manager of the land department for Skelly Oil Company, Tulsa, spent the Christmas holidays in a hospital. Cashman suffered a badly fractured leg when a horse he was riding shied and threw him. Physicians reported he was "doing nicely" but must remain under observation for some time yet.

R. I. CLANCY, president of Plains Petroleum Corporation, Ltd., carrying out a development program on the Taber structure, southern Alberta, Canada, left for Toronto, Ontario, on business last week. Flying by way of Chicago, he was grounded at that city for a short period by unfavorable weather conditions.

S. A. ANNAND, secretary-treasurer of both Commonwealth Petroleums, Ltd., and Commoil, Ltd., has resigned his positions with the Alberta producing companies and will represent an East Canadian financial group interested in Alberta oil development. He will remain in Calgary. L. F. Clarry, Calgary, has been named successor to Annand.

DR. ARTHUR L. DAY, director of the Geophysical Laboratory, Washington, D.C., was elected president of the Geological Society of America, December 28. He succeeds Dr. Charles Palache of Harvard University, who received the Robbling Medal of the Mineralogical Society of America during the convention held at Washington.

As vice presidents the Geological Society elected: Dr. Weyland T. Vaughan, formerly director of the Scripps Institution of Oceanography, University of California; Dr. Warren J. Mead, Massachusetts Institute of Technology; Dr. Joseph A. Cushman, Sharon, Mass., and Dr. Normal L. Bowen, University of Chicago.

The Paleontological Society, in joint

convention with the geologists, elected as president Dr. C. W. Gimorel, United States National Museum, and as vice president Gayle Scott, Texas Christian University. Merle Cathcart Israelsky, United Gas Public Service Company, Houston, was elected a fellow.

The Society of Economic Geologists elected, a year in advance, its president for 1939—Arthur C. Veatch of New York. Donald H. McLaughlin of Harvard University assumed the presidency for the coming year.

Councilors elected for the years 1938-1940 included Frederic H. Lahee, Sun Oil Company, Dallas, and Ira B. Jorelemon, San Francisco.

J. G. GEMMELL, identified for some years with the oil industry in Western Canada, has been elected to the directorate of Anglo-Canadian Development & Holding Company, Ltd., Alberta Producing Company, to fill the vacancy caused by the resignation of Archie K. Leitch.

KENNETH DEGLER, driller employed by the Kingwood Oil Company on a test near Wakefield, Illinois, broke his leg above the ankle while working at the well last week.

JOHN W. RUSSELL, one of the first Mid-Continent oil men to locate in Illinois in anticipation of the boom which occurred this past summer, was chairman of an oil men's sub-committee in charge of contributions to Mattoon's Community Chest. Mr. Russell and his committee were credited last week with gaining a "100 percent" rating for the industry. Other members of the committee were John Young, Robert Payne, A. R. Thompson, S. G. Elder, Kenneth

WESTERN KENTUCKY GEOLOGICAL SOCIETY ORGANIZED BY GEOLOGISTS ENGAGED IN NEW PLAY IN THAT DISTRICT

»

THIRTY MEMBERS ELECT JAMES POTEET THEIR PRESIDENT

»

GEOLOGISTS who are doing the preliminary work to determine the possibility of finding deep oil in Western Kentucky recently organized the Western Kentucky Geological Society, the object of which is to promote the science of geology, especially as it relates to petroleum and natural gas; to promote the social and professional relationship of the members, and to provide a meeting for the presentation and discussion of subjects of mutual interest.

At the December meeting, the first since the organization was formed, officers were elected. They are: James Poteet, Kentucky Natural Gas Company, president; N. W. Shiarella, Miller and Shiarella, vice president; Ralph Knipe, Ohio Oil Company, secretary-treasurer; W. Keith Miller, Carter Oil Company, and George R. Wesley, Snowden & McSweeney Company and The Cumberland Petroleum Company, members of the executive committee. The society has 30 members.

Large tracts of land have been leased in six Western Kentucky counties in the Illinois Coal Basin for possible deep drilling. The geologists are now at work in this area which is composed of Daviess, Henderson, Union, Webster, Hopkins and Muhlenberg counties. Deep drilling in Southern Illinois has spurred activity in the Western Kentucky portion of the basin.

Among the firms interested in this part of the field who have geologists at work are: Sun Oil Company, Ohio Oil Company, Chester Oil Company, Imperial Oil and Gas Producing Company, Phillips Petroleum Company, Ramsey Petroleum Corporation, The Texas Company, Pure Oil Company, Carter Oil Company, Shell Petroleum Corporation, Western Kentucky Petroleum Company, Kentucky Natural Gas Company, J. C. Ellis, Cumberland Petroleum Company, Snowden & McSweeney Company, Sands Petroleum Company, and Miller and Shiarella.

Seismograph, magnetometor and gravimeter outfits are being used by the geologists in locating the deeper oil bearing sands.

DR. H. T. JAMES, managing director of Pioneer Petroleums, Ltd., has returned to Calgary, Alberta, following an inspection trip of the Privateer property in the Zeballos area.

R. H. WALKER and J. E. PFEIFER, of Bismarck; R. A. Goodwin, Marmarth; William Crockett, Wales, and A. C. Slade, Rhame, are directors of the Tri-State Oil & Gas Company which was in-

Members of the Western Kentucky Geological Society, who attended the organization meeting in Owensboro, Ky., recently are shown below. Front row, left to right: W. Keith Miller, Carter Oil Company, member of executive committee; George Wesley, Snowden & McSweeney and The Cumberland Petroleum Corporation, member of executive committee; N. W. Shiarella, Miller and Shiarella, vice president; James Poteet, Kentucky Natural Gas Company, president; Ralph Knipe, Ohio Oil Company, secretary-treasurer.

Second row: N. P. Whaley, Sands Petroleum Company; Allen Ehlers, Carter Oil Company; Kenneth Parsons, Carter Oil Company; H. L. Griley, Sun Oil Company; H. A. Sackman, Phillips Petroleum Company.

Third row: B. M. Miller, The Texas Company; Dr. Judson R. Griffin, Western Kentucky State College; R. M. Trowbridge, Carter Oil Company; Sam Zimmerman, Carter Oil Company, (face partly hidden); E. W. Hard, Sun Oil Company; Arthur Wedel, Pure Oil Company, (face hidden); W. A. Barth, Imperial Oil and Gas Company, (face hidden); J. A. Brown, Kentucky Natural Gas Company; H. E. Keller, P. S. McClure, Shell Petroleum Corporation; A. G. Wickersham, Chester Oil Company; Roger Sawyer, Ramsey Petroleum Corporation; Phil Aswerus, Western Kentucky Petroleum Company; and Vincent Evans, Carter Oil Company.

corporated under North Dakota law last week to drill and prospect for oil and gas and to buy and sell royalties. Authorization was given for a $250,000 stock issue, making the company one of the largest firms to be incorporated in the state. Headquarters will be maintained at Bismarck.

S. G. COULTIS, field superintendent for Royalite Oil Company, Ltd., at Turner Valley, Alberta, Canada, has been named to head the pipe line division of the company. He will make his headquarters at Calgary and will take over his new duties in mid-January. Coultis came to Turner Valley in 1917 to manage Dingman Oil Company, Ltd., for Imperial Oil Company interests. With organization of Royalite Oil Company in 1921, he was made plant manager and two years ago was appointed field superintendent for all Royalite operations.

G. O. STEWART, of Stewarts and Lloyds Pipe Company, England, is in Calgary, Alberta, Canada, where he is supervising construction of a five-mile pipe line for wells of the Anglo-Canadian Development & Holding Company, Ltd. Stewart's visit in the Turner Valley area is part of a world tour which has already taken him to Egypt, India, China and New Zealand on a search for new markets as a representative of the British steel industry. Completion of the re-armament program in England makes necessary the addition of new markets in English mills, which he says are now running at 120 percent capacity, are to be kept running at top production. He traveled 1400 miles into the interior of China, north of Shanghai, just before the Sino-Japanese conflict began and described to Turner Valley operators Chinese drilling of wells 4000 feet deep with hand power and bamboo rigs.

TOM CANIFAX, driller for Jack Shaffer and Wiser Oil Company in the Illinois coal basin area, is spending the holidays in Oklahoma.

JOHN D. DAVIS, Illinois manager for Benedum-Trees Oil Company, and Mrs. Davis are in Pittsburgh for the holidays. W. J. Jones, field superintendent for the company, and Mrs. Jones, likewise.

PAT KENNON, district manager of Oilwell Supply Company in charge of the firm's store at Clay City, Illinois, is vacationing in Texas and Mexico. Bill Wright, field salesman for the company at Clay City, spent the Christmas holidays at Wewoka, Oklahoma.

FRED KROGER, formerly of the firm of Monaghan & Kroger, drillers of the Liebke test east of Flora, Illinois, left that city last week with Mrs. Kroger for Miami, Florida, where they will spend the winter.

DEAN ROWLAND and MILLARD WILSON, geologists for Duncan Oil Company and Graham Oil Company, respectively, in the Illinois coal basin area, left Flora for Shreveport, Louisiana, where they planned to spend the holidays.

JOHN W. ROBINSON, divisional manager for Reed Roller Bit Company at Clay City, Illinois, was in Houston last week and planned to take in the Rose Bowl football game at Pasadena, Calif.

HARRY J. GIBBONS has been transferred to the Tulsa office of Skelly Oil Company from the firm's field force in the Monahans area in West Texas.

CHARLES R. HOUSSIERE, Jennings, Louisiana, was visiting in Houston last week.

J. R. CASEY, Houston, has returned to his desk after spending several days in Wichita Falls, Texas.

C. E. STURDEVANT, with Phillips Petroleum Company at Pampa, Texas, has recently been appointed general chairman of a committee which will sponsor the 1938 spring meeting of the Mid-Continent District of the American Petroleum Institute's division of production, to be held at Amarillo, February 17 and 18.

C. J. HARES, chief geologist with Ohio Oil Company at Marshall, Illinois, was a recent Houston visitor.

RAY SHAW, former scout for Carter Oil Company, Oklahoma City, has recently been transferred to Shreveport, Louisiana, to head the industrial relations department of Standard Oil Company of Louisiana.

R. T. BENNETT, formerly connected with Mene Grande Oil Company of Venezuela, is visiting in Houston.

R. J. SCHILTHIUS, petroleum engineer for Humble Oil & Refining Company, Houston, was the principal speaker at the Houston Geological Society's regular weekly meeting, December 30. His subject was "Connate Waters in Oil and Gas Sands."

N. W. HUNTER, formerly with Texas Gulf Producing Company, Houston, recently announced his retirement as chairman and member of the board of that company. J. A. Elkins, president of the City National Bank, Houston, was elected a member of the board of directors and Doyle Smith, secretary of the company, was named treasurer.

W. W. MOORE, sales engineer for Oilwell Supply Company at Flora, Illinois, was in Dallas, Texas, where he visited his home folks for Christmas.

L. DEAN BRUNSON, of Flora, Illinois, headquarters of Dowell, Inc., and Mrs. Brunson spent Christmas at their home in Midland, Michigan.

JOHN PHILYAW, of the Louisiana-Arkansas office of the Mid-Continent Oil & Gas Association with headquarters in Shreveport, Louisiana, was a business visitor in Tulsa, Oklahoma, last week.

R. E. ADAIR, petroleum engineer for the Texas Railroad Commission recently stationed at Marshall in the East Texas field, has joined the engineering staff of American Liberty Oil Company. He will remain at Marshall.

ELMER R. CORN, president of Plains Oil Company, has been elected to the city commission at Wichita, Kansas. Corn, who is discoverer of the Corn field of Sedgwick County, Kansas, and has production in the Russell County field of that state, the Oklahoma City field and the Signal Hill field of California, will fill out the unexpired term of Senator Frank Nighswonger, who died recently.

HARRY L. GURNEY, pumper for Mid-Continent Petroleum Corporation on a lease near Yale, in Payne County, Oklahoma, will be guest of honor at the first annual 20-year service banquet given by the company, honoring 181 employes and their wives. Gurney joined the company the day it was formed, November 27, 1913. He is the only man, other than Jacob France, president, who has been with the company continuously since its inception.

FRED E. COOPER has returned to Tulsa from a business trip to South America.

DIED

JOHN A. COLLITON, 52, former head of Cherokee Oil & Development Company, which made an unsuccessful attempt to establish an oil field around a freak producer near Summerfield, Cherokee County, Texas, in 1924-26, died December 23 at his residence in Glendale, California. The giant East Texas field was later uncovered and expanded to within 15 miles of the above prospecting, which was shared by the late Col. Alfred E. Humphreys.

JOHN BANTON BROOKS, 31, production superintendent of Woodley Petroleum Company, Cotton Valley, Louisiana, committed suicide at his brother's home in Houston, December 27.

DEVERNE VENSEL, 62, pioneer oil operator of Tulsa, died at his country home southeast of Jenks December 25. He had been in ill health for the past several years. Vensel was a native of Monroeville, Pennsylvania, and became actively engaged in the oil business when 17 years old. In 1904 he came to Tulsa as manager of National Supply Company and retired from the supply firm after serving there 16 years. Funeral services were held December 27 with interment at Rose Hill Mausoleum.

CHARLES (SPRIG) MILLER, 40, West Texas operator and former assistant superintendent of land department for Tide Water Associated Oil Company, was found dead December 25 with a broken neck at an Abilene, Texas, football stadium. He is survived by two small sons. Burial will be made at Fairmont, West Va., Miller's former home.

CHAUNCEY E. DOUD, manager of the Cleveland district of Sun Oil Company, died December 19 at a Cleveland hospital after a brief illness. Surviving are his widow, a son, a brother and a sister.

WILLET C. WELLS, petroleum technologist and inventor of several devices used in oil refining, died December 18 at his home in East Cleveland, Ohio. He was 96. Burial was in Columbus, Ohio, where he had made his home for many years before coming to Cleveland four years ago. Surviving is one son, Frank E. Wells.

FRANK J. BOYD, 69, head of the land department for South Penn Oil Company until his retirement four years ago after 32 years with the company, died at his home in Oil City, Pennsylvania, December 17. Surviving are his widow, three daughters, two sons and one sister.

EXTRA **WILSON SUPPLY NEWS** EXTRA

VOL. 1 HOUSTON, TEXAS, JANUARY 3, 1938 No. 1

UNTOLD MILLIONS TO BE SAVED IN FLUID RAISING COSTS!!

Users report substantial savings

The Nixon Surface Control Gas-Lift System, now sweeping to fame as the most efficient, most economical method of raising fluid is well on the way to saving the oil industry millions of dollars.

There are a great number of these units now in operation that are making sensational records by lifting more oil at greatly lowered cost.

This accomplishment is the result of three important factors: 1st. Initial cost is considerably less than any type standard pumping rig. 2nd. The Nixon Surface Control Gas-Lift System eliminates rods and working barrels, pump and pump cups, pumping units and walking beams. It reduces operating costs, lease and maintenance work very substantially. 3rd. Large volumes of fluid are raised by the natural well pressure or compressed pressure. Only enough pressure is used to raise the heads to the surface as frequently as possible to obtain the necessary volume. No pressure is wasted—no fluid lost. The gas-fluid ratio is many times lower than with ordinary fluid-raising methods. The Nixon Surface Control Gas-Lift System is used on both, intermittent and continuous flow wells. It operates successfully at any depth.

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SALES OFFICES—Tulsa, Oklahoma; Dallas, Texas; Shreveport, Louisiana.

Continued Weakness

Unsatisfactory condition of gasoline market further complicated by less satisfactory control of crude production, but prices hold.

THE oil industry's markets remain in an unsettled state, although prices have remained fairly steady during the past week, with exception of a local crude price cut in Michigan.

The continued unsteadiness of the general market is due in large part to the unusually weak gasoline market. But an additional adverse factor has been introduced in the form of less satisfactory control of crude oil production.

The allowables that have been prescribed by the officials of the leading producing states for January are less strict than those which have prevailed in recent months.

Allowables Less Strict

The six outstanding oil producing states, accounting for about 92 percent of all United States crude production, have authorized for January daily crude production 18,845 barrels daily in excess of the combined total recommended by the Bureau of Mines. This excess is about 6/10 of one percent. It must be conceded that this excess is relatively small. But it is significant because it indicates a drifting away from the Bureau of Mines figures. Texas, New Mexico, Louisiana, and Kansas all have January allowables greater than the Bureau of Mines suggestion.

These excesses are dangerous because they tend to promote a lack of cooperation among the states. And without such cooperation there is the hazard that the United States crude production soon may materially exceed market demand, and result in additions to storage.

However, as stated before, these January allowables actually are in fairly close conformity with the Bureau of Mines suggestions, and consequently it appears that crude stocks in January will not show any material change. It has been estimated that crude stocks at the end of this year will aggregate about 302,000,000 barrels. And under the January allowables there will probably be a similar quantity in storage at the end of January.

Crude Market

The crude oil market naturally is in a precarious condition, in view of the weak gasoline market and the less favorable control of crude production. And the general situation possibly was partially responsible for the cut last week in prices in two Michigan districts, although local conditions apparently were primarily responsible for those reductions.

Michigan Crude Cut

Crude oil prices in the West Branch-Ogemaw County and Clayton-Arenac County fields of Michigan were cut from $1.09 to 80 cents per barrel November 29. This is the first time since NRA code regulation of the industry that oil has sold for less than $1 a barrel in Michigan.

Closing of lake navigation, depressed fuel oil markets from slowing up of industrial plants, and inferior quality of Ogemaw and Arenac County crudes, were cited as causes of the drastic, 29-cent cut by McClanahan Pipe Line Company and Simrall Pipe Line Corporation, chief buyers in the two fields.

The principal market for oil from the two fields has been Buffalo, New York, where it is refined chiefly for fuel oil. Rail rates represent a 15 cents per barrel differential over lake transportation to this market, buyers said.

The cut does not affect Midland, Gladwin, Isabella, and Allegan prices, which range from $1.18 to $1.27 per barrel. Many operators expressed fear, however, that a general cut might follow. Ogemaw County produced 70,000 barrels of oil and Arenac 100,000 barrels in November.

New Fields

The Standard Oil Company of California effective December 22 enlarged its schedule of prices to include prices for crude in the Greely and Canal field in Kern County. The prices for Greeley and Canal crude range from 84 cents a barrel for 27 gravity oil up to $1.64 for 48 gravity crude and above. In this revision no changes were made except addition of the two new fields.

Sun Oil Company also added two fields to its price schedule for the Gulf Coast. The company inaugurated postings of $1.25 a barrel each for the Seabreeze and Willow Slough fields.

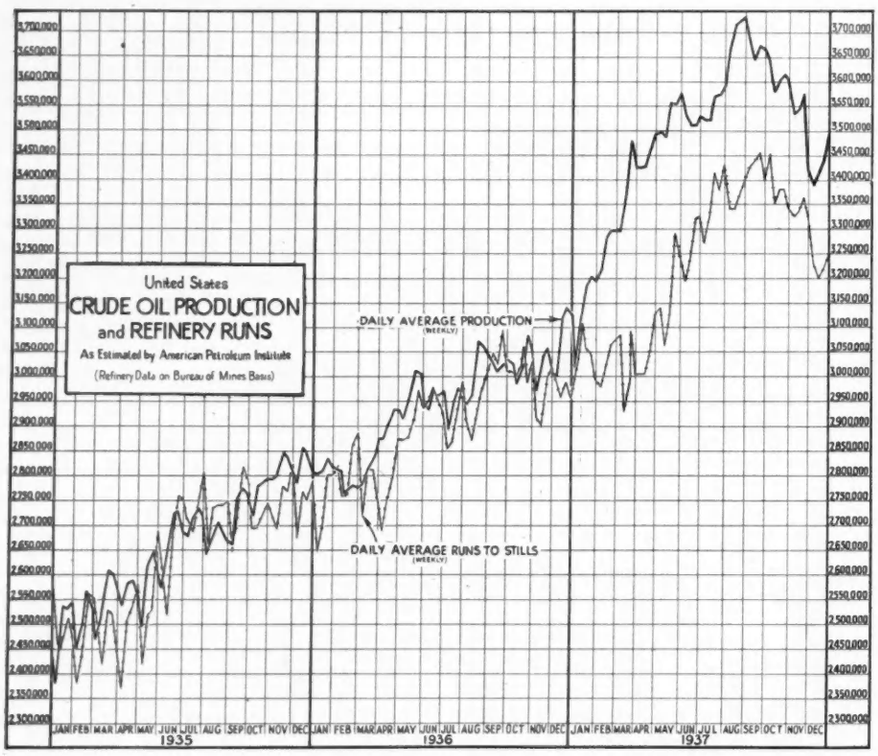
Effective December 28, Standard Oil Company of Louisiana announced a price schedule for crude in the Roanoke and North Crowley fields of South Lou-

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 27	3,431,300	3,060,000	293,587,000	*83,538,000	96,591,000
April 24	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August 29	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 27	3,425,800	3,325,000	304,156,000	68,544,000	121,616,000
December 4	3,387,000	3,230,000	303,034,000	70,193,000	121,329,000
December 11	3,414,450	3,200,000	303,163,000	70,513,000	120,154,000
December 18	3,439,850	3,220,000	303,041,000	73,288,000	119,919,000
December 25, 1937	3,492,600	3,245,000	.....	74,437,000	118,659,000
December 26, 1936	3,133,250	2,955,000	‡288,184,000	60,873,000	106,889,000
Change in past year	+11.5%	+9.8%	.....	+22.3%	+11.0%

* All time peak. ‡ Stocks December 19, 1936.



isiana, the first postings for those districts.

The schedule calls for a top price of $1.36 for 40 and above with a 2-cent differential for each degree down to 26 to 26.9 gravity, which is $1.08; and a 3-cent differential for each degree from 26 to 21, the latter being quoted 90 cents. The price applies to all oil purchased prior to the posting.

Gasoline Market Weak

The weakness of the gasoline market was further demonstrated when Standard Oil Company of Ohio, effective December 24, reduced its statewide tank wagon gasoline price structure ½-cent a gallon, meeting a similar reduction by Sun Oil Company. Standard of Ohio also reduced service station prices ½-cent a gallon at places where it posts such prices locally.

In connection with the reduction of prices, Standard Oil Company of Ohio, pointed out that the general gasoline market has weakened recently, due to seasonal accumulation of excessive stocks. The last previous general change in gasoline prices by Standard of Ohio was a ½ cent a gallon reduction made November 4.

Summary of Wells Completed in the United States Week Ending January 3, 1938

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1938	Total this Date, 1937
Alabama	.....	.....	.....	.....	.....	.....	.....
Arkansas	4	3	.....	1	5,093	4	.....
California	16	13	.....	3	6,385	16	19
Colorado	.....	.....	.....	.....	.....	.....	1
Florida	.....	.....	.....	.....	.....	.....	.....
Illinois	25	16	.....	9	4,838	25	.....
Indiana	.....	.....	.....	.....	.....	.....	.....
Kansas	45	24	3	18	23,601	45	40
Kentucky	24	10	5	9	380	24	4
Louisiana	7	4	1	2	645	7	7
Michigan	22	15	.....	7	3,676	22	29
Mississippi	2	.....	.....	2	.....	2	.....
Montana	2	2	.....	.....	105	2	2
Nebraska	.....	.....	.....	.....	.....	.....	.....
New Mexico	9	8	.....	1	2,595	9	15
New York	2	.....	2	.....	.....	2	.....
Ohio	21	6	4	11	77	21	19
Oklahoma	42	21	1	20	8,976	42	63
Pennsylvania	4	1	3	.....	10	4	.....
Texas	210	169	11	30	260,935	210	213
Utah	.....	.....	.....	.....	.....	.....	.....
West Virginia	17	3	10	4	30	17	2
Wyoming	1	.....	.....	1	.....	1	4
Total this week	453	295	40	118	317,346	453	418
Total last week	475	321	49	105	380,836	.....	.....
Total this year	453	295	40	118	317,346	.....	.....

CRUDE OIL PRICES

Complete tables of prices paid for crude oil at the well in principal fields is shown on page 46. This schedule will appear only in the first issue of each month.

In the meantime, gasoline prices at refineries in Oklahoma and Kansas have remained mostly unchanged. But in the Chicago market there has been further sagging of prices of the low octane grades.

Kerosene and Fuel

Kerosene prices have remained generally unchanged at Mid-Continent refineries.

Fuel oil prices have shown further improvement in the Chicago market, but have declined on the Pacific Coast. In California, major companies have reduced posted prices on both light and heavy fuel oil in tank car lots 10 cents a barrel at all Pacific Coast points except Bakersfield, where a reduction of 15 cents was made. At Los Angeles, the new price for heavy fuel is $1.00 a barrel while the price of light fuel is $1.10 a barrel. In the meantime, most of the independent suppliers have posted prices 2½ cents a barrel under the new postings of the major companies.

Statistical Situation

The past week did not bring any material change in the statistical situation of the oil industry.

The general market remains marred by excessive gasoline stocks. The gasoline storage was increased more than 1,000,000 barrels again in the week ended December 25, rising to 74,437,000 barrels. At that level the gasoline storage is cause for considerable concern. It represents the most gasoline that the industry has had on hand at this time of the year in its history. These stocks are within about 9,000,000 barrels of the all-time peak that was reached last spring. And it now seems inevitable that the gasoline inventories will rise materially next spring above that former peak.

In connection with gasoline storage W. S. Farish, head of Standard Oil Company of New Jersey, stated last week that gasoline storage in the com-

[*Continued on page 47*]

Comparison of Permits Granted for New Wells

STATE.	Week Ending Jan. 3	Total this Mo.	Total this Year	Total this Date Last Year	1937 Year Total
Arkansas	2	2	2	...	240
California	36	36	36	19	1,584
Louisiana	20	20	20	...	1,227
Kansas	23	23	23	52	2,663
Michigan	12	12	12	13	958
Oklahoma	34	34	34	52	2,711
Texas	105	105	105	255	17,238
Total	232	232	232	391	26,621

Production Drops Again

Final week of 1937 records loss of 15,375 barrels from previous period, which is well within figures set by Bureau of Mines.

DURING the last week of the year, United States crude oil production showed small decrease when it averaged 3,466,825 barrels daily, which was 15,375 barrels below the previous week's level and 24,475 barrels below the Bureau of Mines recommendation for December.

Although Texas, California and Louisiana slightly increased production during the week, decreases in Kansas and Oklahoma greatly exceeded the gains of the three major producing states.

Texas averaged 1,398,000 barrels daily, which was 100 barrels more than in the previous week, 1800 barrels less than the Bureau of Mines allocation, but stayed 43,857 barrels above the state allowable.

California likewise showed a small increase of 2000 barrels, the average output having been 709,000 barrels a day. That was 29,600 barrels more than the estimated demand and 34,400 barrels above the recommendation of the Central Committee of California Oil Producers.

Louisiana also slightly increased its production to 246,950 barrels daily, which was 1350 barrels more than in the previous week, 2950 more than the Bureau of Mines recommendation, but 7025 barrels a day less than the allowable prescribed by the state.

Kansas output was down 9400 to 166,600 barrels daily, which was 19,400 barrels less than the indicated demand and 10,100 less than the state allowable.

Oklahoma showed a drop of 16,825 barrels, the average output having been 533,675 barrels a day. That was 55,125 barrels a day less than the Bureau of Mines recommendation and 16,325 barrels less than the state allowable.

Tulsa.—Effective January 1, the group life insurance plan operated by Carter Oil Company and Oklahoma Pipe Line Company was amended, making all regular employes eligible to subscribe to the plan on the date of employment. Those not classified as regular become eligible at the end of one year's employment. Approximately 300 employes will be able to take advantage of the plan under the new amendment.

Wichita.—Producers in the Ritz-Canton pool of McPherson County and the Silica South pool of Barton County have been notified potential tests will be taken there on or about January 4. Notice was issued by E. G. Dahlgren, director of the conservation division, Kansas Corporation Commission.

JAMES SCOLLON, engineer at West Flank Oil Company's 1 test drilling in Turner Valley, Alberta, was critically injured when he fell from the top of the boiler at the well.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Dec.)	State Allowable in December	BARRELS DAILY FOR WEEK ENDED	
			January 1	December 25
TEXAS—				
Texas Panhandle	.....	.....	72,300	72,200
North Texas	.....	.....	73,100	72,800
West Central Texas	.....	.....	33,100	33,000
West Texas	.....	.....	192,100	191,700
East Central Texas	.....	.....	93,700	94,800
East Texas Field	.....	.....	490,300	489,400
South Texas	.....	.....	250,200	249,300
Texas Gulf Coast	.....	.....	193,200	194,700
Total Texas	1,399,800	†1,354,143	1,398,000	1,397,900
CALIFORNIA—				
Long Beach	.....	.....	58,000	58,000
Santa Fe Springs	.....	.....	40,500	41,000
Huntington Beach	.....	.....	35,000	37,500
Dominguez	.....	.....	29,500	29,000
Inglewood	.....	.....	14,500	16,000
Ventura Avenue	.....	.....	36,500	34,000
Seal Beach	.....	.....	9,200	9,500
Midway-Sunset	.....	.....	73,500	71,500
Elwood	.....	.....	7,500	7,500
Kettleman Hills	.....	.....	82,000	81,000
Mountain View	.....	.....	14,500	15,000
Playa del Rey	.....	.....	7,500	7,800
Wilmington	.....	.....	62,000	61,000
Others	.....	.....	238,800	238,200
Total California	679,400	*674,600	709,000	707,000
OKLAHOMA—				
Oklahoma City	.....	.....	109,550	123,925
Seminole Area	.....	.....	104,600	104,400
Crescent	.....	.....	7,750	8,100
Lucien	.....	.....	12,250	12,500
Fitts	.....	.....	73,300	78,300
Edmond	.....	.....	10,250	11,750
Moore	.....	.....	9,750	9,700
Others	.....	.....	206,225	201,825
Total Oklahoma	588,800	550,000	533,675	550,500
LOUISIANA—				
North Louisiana	.....	.....	76,250	75,400
South Louisiana	.....	.....	170,700	170,200
Total Louisiana	244,000	253,975	246,950	245,600
KANSAS—				
Ritz-Canton	.....	.....	5,125	5,025
Chase	.....	.....	5,000	6,850
Hollow-Nikkel	.....	.....	2,375	2,400
Sedgwick	.....	.....	3,600	3,575
Burrton-Haven	.....	.....	10,300	10,000
Lorraine	.....	.....	2,675	2,650
Russell County	.....	.....	29,825	28,250
Silica-Isern	.....	.....	9,250	15,400
Others	.....	.....	98,450	101,850
Total Kansas	186,000	176,700	166,600	176,000
NEW MEXICO	104,100	107,600	107,700	107,700
MICHIGAN	51,800	.....	50,800	52,300
ARKANSAS	33,900	.....	49,800	44,600
MOUNTAIN STATES—				
Wyoming	57,100	.....	49,600	50,400
Montana	15,800	.....	13,600	15,300
Colorado	4,400	.....	4,500	4,300
Total Rocky Mountain States	77,300	.....	67,700	70,000
EASTERN STATES—				
Pennsylvania Grade	.....	.....	81,500	74,700
Southern Illinois (New Pools)	.....	.....	24,000	22,200
Illinois-Indiana (Old Pools)	.....	.....	10,100	14,900
Others, Eastern	.....	.....	21,000	19,800
Total Eastern States	126,200	.....	136,600	131,600
Total United States	3,491,300	.....	3,466,825	3,482,200

† Allowable as of November 16; increased by December 1 through completion of new wells.
* Recommendation of Central Committee of California Oil Producers.

CRUDE OIL PRICE SCHEDULES

(Figures Revised to December 31, 1937)

MID-CONTINENT GRAVITY SCALE PRICES (Posted January 28, 1937)

(Some fields of Mid-Continent have flat price postings, and are shown separately.)

Gravity	Okla.-Kans.	North La.-Ark.	Rodessa, La.-Tex.	North & W. Cent. Tex.	East Cent. Tex.	Gray Co. Tex.	Carson Hutchinson Co. Tex.	[1]Conroe Tex. Type	West Tex.-N. Mex.	[2]Gulf Coast (Tex.-La.)	[3]Some La. Gulf Areas	[4]Anahuac, Tex. Type	[5]Refugio, Tex. Type	[6]Mirando, Tex. Type
17–17.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.90	.....	.....	.....
18–18.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.92	.....	.....	.....
19–19.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.94	.....	.....	.....
20–20.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.95	.96	.....	*$1.01	*$0.96
21–21.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.98	.98	.....	1.03	.98
22–22.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.01	1.01	.....	1.05	1.00
23–23.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.04	1.04	.....	1.07	1.02
24–24.9	*$0.98	*$0.90	*$0.93	*$0.88	.....	.....	.....	.....	.....	1.07	1.07	.....	1.09	1.04
25–25.9	1.00	.92	.95	.90	.....	.....	.....	.....	*$0.78	1.10	1.10	.....	1.11	1.06
26–26.9	1.02	.94	.97	.92	.....	.....	.....	.....	.80	1.13	1.13	.....	1.13	1.08
27–27.9	1.04	.96	.99	.94	.....	.....	.....	.....	.82	1.15	1.15	.....	1.15	1.10
28–28.9	1.06	.98	1.01	.96	*$1.03	.....	.....	*$1.20	.84	1.17	1.17	.....	1.17	1.12
29–29.9	1.08	1.00	1.03	.98	1.05	.....	.....	1.22	.86	1.19	1.19	.....	1.19	1.14
30–30.9	1.10	1.02	1.05	1.00	1.07	.....	.....	1.24	.88	1.21	1.21	$1.16	1.21	1.16
31–31.9	1.12	1.04	1.07	1.02	1.09	.....	.....	1.26	.90	1.23	1.23	1.18	1.23	1.18
32–32.9	1.14	1.06	1.09	1.04	1.11	.....	.....	1.28	.92	1.25	1.25	1.20	1.25	1.20
33–33.9	1.16	1.08	1.11	1.06	1.13	.....	.....	1.30	.94	1.27	1.27	1.22	1.27	1.22
34–34.9	1.18	1.10	1.13	1.08	1.15	*$0.96	*$0.91	1.32	.96	1.29	†1.29	1.24	1.29	1.24
35–35.9	1.20	1.12	1.15	1.10	1.17	.98	.93	1.34	.98	1.31	.....	1.26	1.31	1.26
36–36.9	1.22	1.14	1.17	1.12	1.19	1.00	.95	1.36	1.00	1.33	.....	1.28	1.33	1.28
37–37.9	1.24	1.16	1.19	1.14	1.21	1.02	.97	1.38	1.02	1.35	.....	1.30	1.35	1.30
38–38.9	1.26	1.18	1.21	1.16	1.23	1.04	.99	1.40	1.04	1.37	.....	1.32	1.37	1.32
39–39.9	1.28	1.20	1.23	1.18	1.25	1.06	1.01	1.42	1.06	1.39	.....	1.34	1.39	1.34
40 & Above	1.30	1.22	1.25	1.20	1.27	1.08	1.03	1.44	1.08	1.41	.....	1.36	1.41	1.36

* Minimum price and applies also to purchases of lower gravity.

[1] Conroe, Tomball, Satsuma, Raccoon Bend Deep fields.

[2] Upper Texas Gulf Coast, including Goose Creek, Spindle Top, etc., and some fields of Louisiana Gulf Coast, including Black Bayou, White Castle, Vinton, Hackberry, etc., except that top price for those Louisiana fields is $1.29 for 34 gravity and above.

[3] Choctaw, Darrow, Lockport, Iowa (Magnolia posting), Cameron Meadows, etc.

[4] Anahuac, Dickinson, Flour Bluff, Turtle Bay.

[5] Lower Texas Gulf Coast, including Refugio, Saxet, etc. Posted 7-6-37.

[6] Duval, Jim Hogg, Webb and Zapata Counties; Heyser, Placedo fields. Posted 7-6-37.

† Maximum price and applies also to purchases of higher gravity.

Mid-Continent Flat Prices

	Flat Price	Date Posted
Arkansas:		
Smackover	$0.90	1–28–37
Louisiana:		
Garden Island	1.37	1–28–37
Lafitte	1.24	1–28–37
Texas:		
East Texas	1.35	5–22–37
Talco	.73	1–28–37
Livingston, Cleveland	1.27	1–28–37
Hardin	1.15	1–28–37
Van	1.10	1–28–37
Pettus	1.37	1–28–37
Pecos County	.91	1–28–37
Pecos Shallow	.81	1–28–37
Luling	1.00	1–28–37
Lytton Springs	1.12	1–28–37
Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.09	1–28–37

Michigan Prices

Central Michigan	$1.27	7–24–37

Middle West Prices

Lima	$1.25	1–28–37
Illinois	1.35	1–28–37
Princeton	1.35	1–28–37
Western Kentucky	1.40	1–28–37

Rocky Mountain States Prices

	Flat Price	Date Posted
Elk Basin	$1.30	1–28–37
Frannie Light	.70	11– 4–36
Frannie Heavy	.62	11– 4–36
Grass Creek Light	1.30	1–28–37
Grass Creek Heavy	.62	11– 4–36
Hamilton Dome	.57	11– 4–36
Big Muddy	1.23	1–28–37
Rock Creek	1.20½	1–28–37
Sunburst	.90	11–16–37
Lance Creek	.97	1–28–37
Osage	1.08	.....
Cat Creek	1.07	8–25–33
Cut Bank	1.35	6– 3–36
Pondera	1.05	9–29–33
Hogback	1.00	9– 8–33

Pennsylvania Prices

Bradford-National Transit	$2.20	12–1–37
Sw. Pa. Pipe Line	1.88	12–1–37
Eureka Pipe Line	1.82	12–1–37
Buckeye Pipe Line	1.70	12–1–37
Corning Grade	1.27	12–1–37

Canada Prices

Petrolia	$2.10	9– 9–33
Oil Springs	2.17	9– 9–33

Mexico Prices

F.O.B. Tampico; net; U. S. Currency, buyer pays tax	$0.95	Oct., 1937

Major Price Changes

	Penna. (Nat. Tr.)	Mid.-Cont. (36 Gr.)	Calif. (26 Gr.)
June 19, 1933	Up 10	Up 19	.....
June 26, 1933	Up 10	.....	Up 9-12
July 6, 1933	Up 13	Up 10	.....
July 17, 1933	Up 15	.....	.....
July 28, 1933	Up 15	.....	.....
August 11, 1933	Up 10	.....	.....
August 24, 1933	.....	Up 10	.....
August 30, 1933	Up 15	.....	.....
September 6, 1933	Up 10	Up 10	Up 15
September 8, 1933	.....	Up 15	.....
May 1, 1934	Up 10	.....	.....
November 6, 1934	Cut 25	.....	.....
December 6, 1934	Cut 25	.....	.....
Ja	Up 15	.....	.....
Fe	Up 15	.....	.....
May 16, 1935	Cut 15	.....	.....
June 26, 1935	Cut 15	.....	.....
July 16, 1935	Cut 10	.....	.....
August 29, 1935	.....	.....	Cut *1
September 6, 1935	Up 5	.....	.....
October 29, 1935	Up 15	.....	.....
November 1, 1935	.....	.....	Up* 28
November 18, 1935	Up 15	.....	.....
December 6, 1935	.....	.....	Up *9
January 9, 1936	.....	Up 10	.....
January 13, 1936	Up 15	.....	.....
February 26, 1936	.....	.....	Up †5
December 28, 1936	Up 12	.....	.....
January 28, 1937	.....	Up 12	.....
February 24, 1937	Up 10	.....	.....
June 7, 1937	Up 15	.....	.....
September 1, 1937	Cut 22	.....	.....
October 12, 1937	Cut 25	.....	.....
December 1, 1937	Cut 15	.....	.....

* Signal Hill 26 gravity. † Seal Beach 26 gravity.

Crude Production Taxes

Oklahoma—Five percent of gross value less royalty interest.

Texas—2⅝ cents or 2¼ percent, whichever is higher.

Louisiana—From four to 11 cents a barrel, depending upon gravity.

Arkansas—2.6 percent of gross market values.

Montana—Two percent of gross value at well and ⅓ of 1c per barrel.

New Mexico—Severance tax of 2 percent on oil and gas.

Wyoming and New Mexico—Production tax based upon state and county assessments.

California—.66443 mills per barrel of oil produced and 17.39 cents an acre on proved lands.

Continued weakness

[*Continued from page 44*]

ing spring probably will increase to 93,000,000 barrels or 12,000,000 barrels higher than the "wholly adequate" stocks on hand at the corresponding time last spring.

Gasoline Stocks Excessive

The gasoline storage of 74,437,000 barrels on hand December 25 was 22.3 percent greater than the supplies held one year previously. Such an increase in gasoline stocks obviously is not justified by market conditions. The demand for gasoline has been running this year only about 10 percent higher than last year. And the Bureau of Mines has estimated that in January of 1938 the domestic demand for motor fuel will be only 8 percent higher than the apparent demand of January 1937. The bureau at the same time predicted that exports of gasoline would continue relatively heavy, estimating total exports for the month at 3,800,000 barrels.

Production and Runs

Very little fault can be found in the meantime with latest figures on crude oil production and refinery operations.

In the week ended December 25 crude oil production averaged 3,492,600 barrels daily. That was more than in the previous week but it was only 11.5 percent more than the output in the corresponding period last year. This increase in crude production over a year ago is largely justified by the gain that has occurred meanwhile in the demand for petroleum. The total demand for United States oils has been running around 10 percent above a year ago.

Refinery operations similarly have continued in fair conformity with market demand. In the week ended December 25, crude runs to stills averaged 3,245,000 barrels daily.

Refinery Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 4 to 4¼ cents a gallon; 63 to 66 octane, 4⅜ to 4⅝ cents; 67 to 69 octane, 4⅝ to 4⅞ cents; and 70 to 72 octane 5 to 5¼ cents.

Corresponding prices in the Chicago market were as follows: 3¾ to 4¼ cents, 4 to 4½ cents, 4⅜ to 4⅝ cents, and 4½ to 5 cents.

In East Texas the most common gasoline, 60-62, 400 end-point, was priced generally at 4⅛ to 4¼ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4⅛ to 4¼ cents a gallon for the 41-43 water white grade, and from 4¼ to 4⅜ cents for the 42-44 water white grade. Corresponding prices in the Chicago market were: 4⅛ to 4⅜ cents and 4¼ to 4⅝ cents.

Fuel oil prices were mostly unchanged. In the Chicago market range oil was priced from 4⅛ to 4½ cents a gallon. The No. 1 white oil was priced from 4⅛ to 4⅜ cents, and the No. 1 straw from 4 to 4⅛ cents. No. 2 straw was 3¾ to 3⅞ cents and No. 2 dark from 3⅝ to 3¾ cents. No. 3 oil was 3½ to 3⅝ cents. No. 4 was $1.05 to $1.10 a barrel to domestic consumers and 95 cents to $1.10 to industrial buyers. No. 5 oils were 80 to 85 cents for domestic and 77½ to 85 cents for industrial sales. The No. 6 oil was quoted to the usual industrial customers at 55 to 65 cents a barrel.

Seek Better Price

Steps toward obtaining better prices for Pennsylvania grade crude, with a threat of state control of the producing and refining branches of the oil industry in the background, were taken at Bradford, Pennsylvania, last week by the Bradford District, Pennsylvania Oil Producers Association.

Members of the committee are A. E. Booth, W. N. Davis, D. T. Andrus, C. E. Streeter, R. S. Pringle, Jr., and J. C. Martin.

A formal statement released by J. C. Martin, executive secretary of the association, declared: "The present situation is more drastic than at any previous time. Since September, the Pennsylvania grade crude oil market structure has suffered a reduction of 62 cents per barrel. The reduction implies a loss to the Bradford field of $30,000 a day or $900,000 a month, and to the whole Pennsylvania grade area, a loss of $50,000 a day or $1,500,000 a month. Crude oil in the Bradford field today is selling for $2.20 a barrel. This, however, is not sufficient to overcome

CALIFORNIA CRUDE OIL PRICES

(Posted February 26, 1936; except El Segundo and Wilmington, posted October 15, 1937, and Greeley and Canal posted December 22, 1937). All gravity above those quoted take highest prices of that field.

Gravity	El Segundo & Signal Hill	Seal Beach Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canyon	Athens Rosecrans	Torrance	Richfield	Whittier East Coyote La Habra	Montebello	West Coyote Hills	Santa Springs	New Hall McKittrick Kern River Round Mountain	Greeley, Canal	Mountain view	Midway-Sunset Buena Vista Hills Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Wilmington
14-14.9	$.80	$.79	$.78	$.79	$.80	$.76	....	$.80	$.76	$.76	$.77	$.78	....	$.70	....	....	$.70	$.70	$.70	....	$.75
15-15.9	.80	.79	.78	.79	.80	.76	....	.80	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.75
16-16.9	.80	.79	.78	.79	.80	.76	....	.80	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.75
17-17.9	.80	.79	.78	.81	.80	.76	....	.80	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.77
18-18.9	.80	.79	.78	.84	.80	.78	....	.82	.76	.76	.77	.78	....	.70	....	....	.70	.70	.70	....	.79
19-19.9	.82	.79	.82	.87	.84	.81	....	.85	.76	.78	.77	.78	....	.70	....	$.70	.74	.74	.71	$.70	.82
20-20.9	.85	.79	.85	.90	.88	.84	....	.88	.78	.82	.77	.80	....	....	....	.70	.78	.78	.72	.70	.85
21-21.9	.88	.79	.89	.93	.93	.88	....	.91	.80	.85	.77	.84	$.78	....	....	.73	.82	.82	.74	.70	.88
22-22.9	.92	.82	.92	.96	98	.92	....	.93	.84	89	.79	.88	.78	....	....	.77	.87	.86	.78	.72	.92
23-23.9	.95	.86	.96	.99	1.02	.96	$.84	.96	.88	.93	.82	.92	.78	....	....	.80	.92	.90	.82	.76	.95
24-24.9	.99	.91	1.00	1.02	1.06	.99	.88	.99	.91	.96	.85	.96	.82	....	....	.84	.97	.94	.86	.79	.99
25-25.9	1.03	.95	1.03	1.05	1.11	1.03	.93	1.02	.95	...	.89	.99	.86	Elwood	....	.88	1.01	.98	.90	.83	1.03
26-26.9	1.06	1.00	1.07	1.09	1.16	1.06	.98	1.05	.98	...	92	1.03	.90	Terrace	....	.91	1.06	1.02	...	....	1.06
27-27.9	1.10	1.05	1.11	1.12	....	1.10	1.03	....	1.02	...	.96	1.06	.95		$.84	.95	1.10	1.06	...	....	1.10
28-28.9	1.14	1.10	1.14	1.15	....	1.14	1.07	....	1.06	...	.99	1.10	.99		.88	.99	1.15	1.10	...	....	1.14
29-29.9	1.17	1.15	1.18	1.18	F.O.B.	1.17	1.12	....	1.09	...	1.03	1.14	1.03	....	92	1.02	1.20	1.14	...	....	1.17
30-30.9	1.21	1.19	1.22	1.21	Pipe	1.21	1.17	....	....	...	1.07	1.17	1.08	F.O.B.	.95	1.06	1.25	1.18	...	....	1.21
31-31.9	....	....	....	1.24	Line	1.24	1.22	Kettleman Hills			1.11	1.21	1.12	Ship	.99	1.09	1.29	....	...	....	....
32-32.9	....	....	....	1.27	....	1.27	1.27	1.19			1.14	1.25	1.16	....	1.03	1.13	1.34	....	...	....	....
33-33.9	....	....	....	....	....	....	1.32				1.18	1.28	1.20	1.28	1.07	1.17	1.38	....	...	....	....
34-34.9	....	....	....	....	....	....	1.37	....	1 23	...	1.22	1.32	1.25	1.32	1.11	1.20	....	....	...	....	....
35-35.9	....	....	....	....	....	....	1.42	....	1.27	...	1.25	....	1.29	1.35	1.15	....	....	....	...	....	....
36-36.9	....	....	....	....	....	....	1.46	....	1.31	...	1.29	....	1.33	1.39	1.19	....	....	....	...	....	....
37-37.9	....	....	....	....	....	....	1.51	....	1.35	...	1.32	....	1.37	1.43	1.23	....	....	....	...	....	....
38-38.9	....	....	....	....	....	....	1.56	....	1.39	...	1.36	....	1.42	....	1.27	....	....	....	...	....	....
39-39.9	....	....	....	....	....	....	1.61	....	1.43	...	1.40	....	....	....	1.31	....	....	....	...	....	....
40-40.9	....	....	....	....	....	....	1.66	....	....	...	1.43	....	....	....	1.34	....	....	....	...	....	....
41-41.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.38	....	....	....	...	....	....
42-24.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.41	....	....	....	...	....	....
43-43.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.45	....	....	....	...	....	....
44-44.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.49	....	....	....	...	....	....
45-45.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.53	....	....	....	...	....	....
46-46.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.56	....	....	....	...	....	....
47-47.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.60	....	....	....	...	....	....
48-48.9	....	....	....	....	....	....	....	....	....	...	....	....	....	....	1.64	....	....	....	...	....	....

rising operating costs such as materials, increased compensation rates, etc. In fact the low market structure has made it difficult for producers to maintain their proper wage scales.

"We are aware that there is a ceiling, the point on the price scale at which our petroleum products will sell without sacrifice. We must be equally aware that there is a floor as well, and below that a cellar. The floor, in our case, must be the firm, substantial footing of recovery costs plus for crude. With a solid floor as our base it seems our industry could constantly reach toward the ceiling, meanwhile maintaining its equilibrium instead of gymnastics of bounding from one to the other."

After pointing out that there exists a 30 to 40 days' supply of available crude oil stocks in the Pennsylvania grade region, while there is about a 90 days' supply in the country as a whole, and that the Pennsylvania grade market is considered unstable while the national market is considered firm, the statement continues:

"Some producers are wondering whether the answer to the betterment of the situation lies in state control of the industry. Others have expressed the opinion that cooperative action on the part of the refiners in reducing their excessive refined stock inventories and curtailing crude runs to stills to meet demands for refined products, and reduction of crude oil supplies on the part of producers is the answer to a stabilized condition. It has been stated, however, that the producing industry cannot continue to operate at the present low prices of crude oil in the face of the high costs of operation of the present, and unquestionably higher costs of the future."

Bureau's final report for 1936 shows many gains

Total production of crude petroleum in the United States in 1936 was 1,099,687,000 barrels, an increase of 103,091,000 barrels over the 1935 total and nine percent above the previous record of 1929, it was reported last week by the Bureau of Mines in a final summary for 1936.

Increased activity in crude production was reflected in natural gasoline output, which rose nine percent over 1935 to 42,770,000 barrels, it was pointed out. Continued recovery of the steel industry was reflected in a material gain in benzol production, which totaled 2,502,000 barrels or a third higher than in 1935. Imports of crude remained virtually unchanged at 32,327,000 barrels in 1936 against 32,239,000 barrels in the preceding year, but receipts of foreign refined products, principally fuel oil, increased substantially.

Drilling continued to increase, the total number of completions being 25,166, seventeen percent higher than in 1935. The number of producing wells rose to 349,450 on December 31, an increase of 8,460 for the year. Net indicated abandonments were 9,340. The average production per well per day for the year was 8.7 barrels, the highest ever recorded, with wells in the Louisiana Gulf Coast having the highest daily average output of any district.

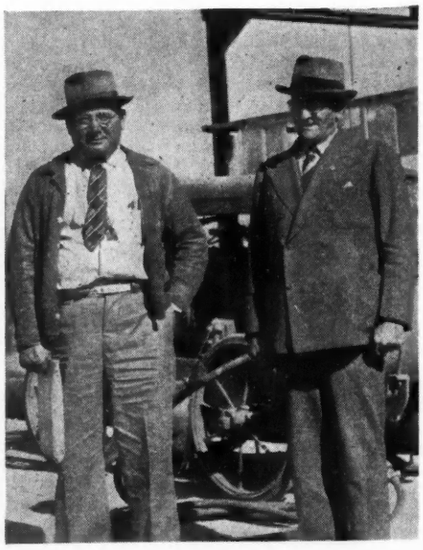
Crude runs to stills kept pace with production, rising eleven percent to a total of 1,068,570,000 barrels, including 33,933,000 barrels of foreign crude, the report showed. The principal change in refinery practice in 1936 involved the production of a higher percentage of heating distillates at the expense primarily of kerosene and residual fuel oil. The gasoline yield changed but slightly, being 44.1 percent compared with 44.2 percent in 1935.

The indicated domestic demand for motor fuel was 481,606,000 barrels, eleven percent above the 1935 total. Sales of heating oils were 99,257,000 barrels, 29 percent above 1935.

PIPE LINE NEWS

American Liberty handling all Sulphur Bluff crude

Dallas, Texas.—American Liberty Pipe Line Company, Dallas, assumed responsibility of providing market outlet for all oil produced in the Sulphur Bluff field, Hopkins County, in acquiring Normandie Oil Corporation's pipe line system effective January 1. This deal involved 3 miles of 6-inch gathering lines, and an 8-mile, 8-inch discharge line to 20-car rack on the Cotton Belt Railroad at Saltillo. The purchaser has been buying more than half of the field's output, and moving same via a 6-inch carrier to Talco, where deliveries are made to refineries, with the surplus marketed in tank car lots. American Liberty Pipe Line Company will continue to serve Talco refineries, according to D. R. Zachry, general manager, but tank car sales of this 24-gravity oil hereafter will be made from the Saltillo rack in order to attain lower freight rates. Sulphur Bluff and Talco crudes yield a high-grade asphalt.



Inspect new station

C. W. Cardwell, district engineer, left, with B. L. Rogers, superintendent of compressor stations, looking over the progress of construction on Lone Star Gas Company's 15 - unit, 2,500 - horsepower compressor station, Wheeler County, Texas Panhandle. When completed within the next 60 days, the plant will be rated at approximately 60,000,000 cubic feet. Sweet gas from the adjacent productive sector will be handled to the station through an 18-inch main line already in operation.

Complete Ector County gas line

Midland, Texas. — Ector Gas Company, Inc., formed recently by York & Harper, Inc. and others, has completed construction work on a natural gas line, extending from the Goldsmith field to the Harper and Foster fields, Ector County, involving 11 miles of 6⅝-inch welded line and 13 miles of 4-inch screw line. This gas carrier is connected with Landreth Production Corporation's Scharbauer 1-A, SW NW of PSL Section 13, Block A, discovery well of the Goldsmith field, and the latter concern has contracted to supply gas at 3 cents per 1000 cubic feet. The gas will be used for fuel on drilling tests in the Harper and Foster fields, and later for repressuring.

Abilene, Texas.—Humble Pipe Line Company is building 9 miles of 4-inch crude line from the Higgs area, eastern Jones County, thence southwest to its main line station near Hawley to supplement existing facilities. The company operates the only trunk line in Jones County, and the remainder of the production is absorbed by local refineries.

Kansas operators form independent association

The newly organized Kansas Independent Oil & Gas Association, headed by E. B. Shawver of Wichita, has been formed to promote an increased market for Kansas crude oil and will combat legislation unfavorable to the petroleum industry.

Following are officers of the organization: Three vice presidents, D. R. Lauck, Wichita; John Denman, Independence, and A. H. Witt, Russell; F. G. Stodder, Wichita, secretary, and Joe Wylward, Wichita, treasurer. Members of the executive committee include George W. Hinkle, J. A. Vickers and A. S. Ritchie, Wichita, and E. J. Shaffer, Hutchinson.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Another Strike Looms

Mexican oil companies unable to comply with terms set by board; suit for injunction filed in capitol.

MEXICO CITY, Mexico, Dec. 31.—The spectre of another general oil strike is looming as a result of the oil companies' injunction suit against the Mexican government's verdict in the conflict between labor syndicates and the companies and the firms' announcement to their employes that existing wage scales will be continued.

The announcement was furiously received by some elements of workers. There were cases of employes tearing down the announcements that were posted on bulletin boards.

Ask Injunction

A suit for an injunction against the Mexican Government's adverse decision in the general oil conflict has been filed with the national supreme court by the 10 major oil and 3 tanker companies involved in the controversy that led to the general strike. The companies also filed a request with the court for a suspension of enforcement of the government's ruling until the civil tribunal has acted upon the injunction suit, a procedure that is required by Mexican law.

Refuse Verdict

The Mexican government's verdict in the general oil conflict imposed terms that are impossible of fulfillment, the companies involved in the controversy formally advised their employes in a statement, which says in part:

"The directors of your company very much regret to advise you that, despite their efforts to reach a fair and equitable settlement of the economic conflict between the oil industry and the Syndicate of Petroleum Workers, the federal board of conciliation and arbitration in its award of December 18 imposed conditions of such nature that it is absolutely impossible to comply with the award.

"You are aware that the oil industry made you an offer which, had it been accepted, would have greatly improved your economic status, not only over that which you at present are enjoying, but far in excess of that enjoyed by the workers of any other industry in the country.

"Unfortunately it was impossible to arrive at any agreement, and your directors reiterate their regret that the award imposed terms impossible of fulfillment."

Excavations from which Peru's first oil was produced. The nation comes back into the limelight of international exploration activity with Blue Goose Oil Company taking over the Selden-Breck concession in the Pachitea region.

Blue Goose gets equipment for work on Peru holdings

Rotary drilling equipment recently arrived in Peru destined for exploratory work on a 90,000-acre concession held by Compania de Petroleo Ganso Azul (Blue Goose Oil Company), an American firm organized in Los Angeles to take over the Selden-Breck holdings, THE OIL WEEKLY is advised.

Ganso Azul's holdings are along the Pachitea River, a few miles above its confluence with the Ucayali River in the department of Loreto. Peruvian headquarters is at Agua Caliente, 30 miles above Masisea, which is the junction point for land planes and hydroplanes operating between San Simon and Iquitos.

Preliminary work on the concession, consisting of building a landing field, a pier, building a 12-kilometer road from the river through the jungle to the first well's location, and building housing facilities, has been underway for some months.

Compania de Petroleo Ganso Azul is organized for 2,000,000 Peruvian sols, word from Lima states (one sol is about 40 cents U. S. currency).

Iran production

Production of crude oil in Iran during October totaled 921,000 tons, making a total of 8,498,000 tons, or 59,486,000 barrels for the first 10 months of 1937. Production in September was 937,000 tons.

Ministry grants five Mexican drilling permits

Five drilling permits were granted by the ministry of national economy of Mexico from November 20 to December 18 as follows:

General Administration of National Petroleum, wells Petronac-Istmo 1 and 2, Minatitlan municipality, Vera Cruz state; Pedro Sanchez Navarro, Sanchez Navarro 3, San Miguel Tres Aguas municipality, Vera Cruz; Cia. Mexicana de Petroleo Azteca, S.A., Azteca 1, Buenavista, Panuco, Vera Cruz, and Teodoro Meza Moreno, Cues 1, Altamira municipality, Tamaulipas.

Permits to drill 16 wells were granted to companies and individuals by the ministry of national economy of Mexico from October 20 to November 21 as follows:

General Administration of National Petroleum: wells Petromex 35 and 36, Temapache, Vera Cruz state; Petronac 4, in the federal zone on the right bank of the Huelique river, Poza Rica zone, Vera Cruz, and Rancherias 6 and 7, Camargo, Tamaulipas state; Globe Petroleum Company: wells Globe 19 and 20, Quebrache, Tampico Alto, Vera Cruz; Southern Fuel & Refining Company: wells Cacalilao 370 and 371, Cacalilao, Panuco, Vera Cruz; American International Fuel & Petroleum: Altamira 110, Altamira, Tamaulipas state; Cia. Petrolera Veracruzana, S.A.: Ipaz 1, Rayon, Tamaulipas, and San Carlos 2-v, Minatitlan, Vera Cruz, and Francisco Paza and Luz Etienne de Maza: Exp 6, 7, 8 and 9, Camalote, Panuco, Vera Cruz.

POTENTIAL RAISED

Wildcats on Watson and Battleview showing oil

TWO completions in the Turner Valley field of Alberta, last week, both described as excellent producers in the absence of actual production figures, brings the potential of Canada's principal field to approximately 30,000 barrels daily. Production is choked to 35 percent because of limited transportation and marketing facilities.

Sunset Oils, Ltd.'s test on Legal Subdivision 10, Section 20, Township 18, 2-w5, on the outside edge of the west flank, stopped drilling at 7475 feet, 458 feet in the Madison limestone, and blew in, hurling rotary mud and oil 100 feet in the air. The gas flow was estimated between 6,000,000 and 8,000,000 cubic feet while production estimates ru nupwards of 1000 barrels daily.

West Flank Oil Company, Ltd.'s 3, Legal Subdivision 8, Section 32, Township 18, 2-w5, was bottomed at 6870 feet, 328 feet in the Madison, and was cleared with gas and placed on separators at the close of the week.

Three other tests were in the Madison, with completion scheduled for early in January.

Brown Oil Corporation, Ltd.'s 3, Legal Subdivision 1, Section 19, Township 19, 2-w5, about five miles north of the "hot spot" area on the west flank, was standing cemented a few feet in the lime at 6340 feet. Drilling will be resumed this week and the test closely watched.

Interesting Outpost

Most interesting of three tests scheduled to spud this week is Davies Petroleums, Ltd.'s 3, on Legal Subdivision 7, Section 33, Township 17, 2-w5. The test is two miles south of any Turner Valley test now drilling and three miles south of production. Nearest test to the north is Mid-Royal Oils, Ltd.'s 2, Legal Subdivision 3, Section 9, Township 18, 2-w5, now drilling at 300 feet, while half a mile north of Mid-Royal is National Petroleum Corporation's 2, Legal Subdivision 14 of the same section, which was preparing to resume drilling with rotary equipment this week from 3005 feet.

Northernmost producing well in the main crude area is Royalite Oil Company's Sterling-Pacific 3, 6 miles north of the Davies 3 site.

To Complete at Watson

On the Watson structure, 42 miles south of Turner Valley, completion of Mar. Jon Oil Company's 3, Legal Subdivision 3, Section 4, Township 10, 2-w5, was assured last week when additional financing was completed. The test has been idle for several weeks at 5520 feet, having been drilled to that depth with cable tools. A heavy gas pressure has been encountered. Production is expected at about 6000 feet. The structure, which may be a continuation of Turner Valley, is believed by geologists to be one of the most promising in Alberta.

On the Battleview structure, east of Wainwright, Pacalta Oils, Ltd.'s test was drilling at 1800 feet, having encountered heavy gas flows at 434, 1420 and 1620 feet. It is now in the Zebra shale marker above the Viking sand. The Altoba Gas Exploration Company's test, Section 35, Township 47, 7-w4, 8 miles west of the discovery well, is waiting for a core barrel. Bottomed 16 feet in the sand, it made contact with the lower Cretaceous 262 feet above sea level, compared with 292 feet at Battleview Oils, Ltd.'s 1, the discovery, showing the Altoba test to be about 30 feet higher on structure.

More Italian geologists searching for African oil

A second committee formed by Azienda Generale Italiana Petrolio recently arrived in East Africa for a survey of possible oil fields in Italian Somaliland and Ethiopia.

The committee is comprised of three groups, the first of which is headed by Professor Gortani, director of the Geological Institute of the University of Bologna, and embraces among its members Professor Bianchi of the University of Padua. They will work in southern Dunkalia and complete work unfinished by a previous Italian group in Hararino.

Ing. Migliorini, geologist for A.G.I.P. heads the other groups which will work in Somaliland and Ogaden.

An earlier group was kept doing preliminary geological work in Ethiopia by the Italians from November, 1936, through April, 1937.

Japan bans publication of data on oil field work

Japan apparently considers crude oil production statistics and notes on wildcat and field developments as military secrets, for that government has discontinued publication of the statistics and suspended permission to publish data on practically all phases of the petroleum industry, including foreign trade, according to word received from Tokyo December 28.

Production of crude in Japan through July, 1937, totaled 2,272,631 hectoliters for the seven months, with the monthly production figure ranging from a low of 308,020 hectoliters in February to a high of 347,744 hectoliters in January. July's production was 325,425 hectoliters.

Paul Steintorf of Tokyo advises drilling operations in Nippon have been intensified. From April to October, inclusive, 12 wells were completed. Initial production on these wells ranged from 1428 gallons to 14,280 gallons. Nine in the Akita prefecture of Japan proper were divided by fields as follows: Yabase district, four; Omonogawa district, three; Innai district, two. Only one completion was recorded in the period in Niigata field, the remaining two being in Formosa.

Steintorf's data continues:

In the Akita district the depths ranged from 250 to 750 metres, while the Niigata well was brought in at a depth of 964 metres. Deep drilling appears to be the rule in Formosa, one well being brought in at a depth of 980 metres, while the other has been sunk to 3,486 metres and has not yet struck the oil strata, although it has passed through several gas deposits.

Details are summarized in the following table:

Summary of Oil Drilling Results
April-October, 1937

COMPANY	Location of Well	Number	Depth (Metres)	Daily Production (Koku)*	Date
Japan Mining Company....	Omonogawa, Akita...	.....	270	100	April 27
Japan Oil Company.....	Yabase, Akita.....	Hawa 8	289.5	300	May 6
Japan Oil Company.....	Kinsui (Formosa)....	Rotary 32	3,486	Gas only	Aug. 6
Japan Oil Company.....	Yabase, Akita.....	Tsuna 54	290	250	July 16
Japan Oil Company.....	Kyotsu, Niigata.....	Rotary 8	964	Not Stated	July 20
Japan Mining Company....	Omonogawa, Akita...	Nawa 8	250	150	Aug. 18
Asahi Oil Company.....	Innai, Akita.....	Tsuna 7	750	30	Sept. 7
Asahi Oil Company.....	Innai, Akita.....	Rotary 20	700	60	Sept. 24
Japan Mining Company....	Omonogawa, Akita...	2	296	50	Sept. 20
Japan Oil Company.....	Yabase, Akita.....	Tsuna 45	306	100	Oct. 20
Japan Oil Company.....	Yabase, Akita.....	Tsuna 61	311.5	200	Oct. 8
Japan Oil Company.....	Shinchiku, Formosa...	82	980	Not stated	Oct. 3

* Koku equals 47.65389 American Liquid Gallons.

OKLAHOMA FIELDS

Stillwater wildcat has good Wilcox show.

* * *

McLish yields gas pressure near Atoka.

Tulsa.—Two wildcat wells were the center of interest in Oklahoma last week, one of them apparently will open the first pool for the new year.

Mid-Continent Petroleum Corporation's Ramsey 1, SWc NW 18-18n-2e, southwest of Stillwater in Payne County, was waiting on cement after running casing. The well, at 4772 feet in Wilcox sand, had a good show of oil after topping the formation at 4768 feet. Tanks and separator were being set up.

Second test of interest was in the area south of Boggy Depot in Atoka County, southeast Oklahoma. Cited as the key well for that part of the state, Gilmort Oil Corporation et al's Lee 1, NE NW SW 2-4s-10e, began showing good pressure after encountering gas in the McLish formation at 2032 feet. It had been carrying a hole full of water. When bailed, gas pressure increased. Casing was being run for a test. It is on a core drilled structure.

Centrahoma Well

In the Centrahoma area of Coal County, Carter Oil Company et al's Claytor 1, CWL NE SW 27-2n-9e, was acidized with 4000 gallons and given a 507-barrel oil load and was waiting on reaction. The test was drilled to 6722 feet, then plugged back to 6480 feet where it swabbed and flowed 56 barrels of oil in five hours. Operators raised the tubing to 6248 feet and perforated between 6142 and 6148 feet before acidizing. Present total depth is in Viola lime.

Phillips Petroleum Company's Becker 1, NE NW SW 8-5n-10e, southwest of Calvin in Hughes County, was to core ahead from 5745 feet in dolomite. Top of the formation was at 5707 feet and when cutting from the total depth showed oil, it was decided to core ahead.

Fitts Area Active

Activity is apparently on the increase for the small areas recently opened adjacent to the Fitts field of Pontotoc County, with six new operations reported for the West Fitts field. All will be drilled by Patsy Oil Company on the Meharg-West lease. These locations include Meharg 2, SW SE SW 21-2n-6e; Meharg 3, SE SW SW 21-2n-6e; Meharg 4, SWc SE 21-2n-6e; Meharg 5, SE SW SE 21-2n-6e; Meharg 6, SW SE SE 21-2n-6e, and Meharg 7, SEc 21-2n-6e.

In the Jesse pool, Continental Oil Company continued efforts to make a producer of E. Smith 1, NW SW SW 2-1n-7e, which was at a plug-back depth of 3200 feet, where Cromwell sand will be perforated. Drilling was stopped at 4131 feet.

Mid-Continent Petroleum Corporation's Statler 10, NE SE SW 2-1n-7e, was drilling plugs with the hole bottomed at 4420 feet. Statler 11, NE SW SW 2-1n-7e, was drilling at 4019 feet in Hunton lime and Statler 12, CN½ N½ SW 2-1n-7e, was drilling below 590 feet.

Continental Oil Company's C. V. Thompson 1, CSL NW SW 35-2n-7e, outpost test at Fitts, swabbed 80 barrels of oil and 20 barrels of water one day and swabbed 45 barrels of fluid in 16 hours the following day, mostly water.

Operators drilled deeper Stanolind Oil & Gas Company et al's Rushing 5, SE SW SW 32-11n-4e, in the North Shawnee pool of Pottawatomie County. At 4380 feet the well was making 3,000,000 cubic feet of gas and a show of oil. When deepened to 4400 feet, it flowed 73 barrels of oil in 7 hours and made 21 barrels the next hour with gas volume holding up. It had top of the Earlsboro sand at 4373 feet.

In the Lamont pool of Grant County, Carter Oil Company et al's Booher 1, CWL NW SW 16-25n-3w, had 7-inch casing stuck at 5395 feet and was circulating, trying to loosen the pipe. Total depth was 5432 feet in Wilcox sand. Top of the sand was at 5416 feet. In the same area, Carter et al's Barclay 1, CEL SE NE 17-25n-3w, was drilling up bit cone lost at 4880 feet. It had top of the Prue sand at 4660 feet; topped Mississippi lime at 4868 feet before losing the cone.

Phillips Petroleum Company and Shell Petroleum Corporation's McCaughtry 14, SEc NE 21-23n-2w, in the Billings field of Noble County, was drilling ahead below 4286 feet. Lincoln Petroleum Company's Conway 4, NE NW SE 16-23n-2w, was drilling below 4309 feet.

In the Norman area of Cleveland County, Harper & Turner's Sears 1, CW½ NW NW 13-9n-2w, failed to drill by 80 joints of the string lost in the hole and was cementing off the pipe. It was at a total depth of 6850 feet.

Sinclair Prairie Oil Company's Gross 1, SWc NE 22-10n-2w, in the Moore field of Cleveland County, developed a fishing job at 7290 feet in Simpson. Top of the Viola lime was had at 7130 feet and the Simpson was topped at 7180 feet.

In the Waukomis area of southeast Garfield County, Hollenback et al's Clark 1-A, NWc 34-21n-6w, had top of the Mississippi at 6390 feet and was drilling ahead below 6407 feet.

Good Fox Well

Gulf Oil Corporation's Smith 1, CSW SW 26-2s-3w, in the deep Fox area of Carter County, continues good production, but operators reported considerable trouble with the extreme coldness of the 71 gravity fluid. In 13½ hours, the well flowed 500 barrels of oil through ⅝-inch choke and gauged gas at 15,000,000 cubic feet. Casing pressure was reported as 2600 pounds. The fluid froze in the lines and separators. It is being allowed a production of 515 barrels of oil daily after January 1.

Gulf's Johnson 1, CSW NW 27-2s-3w, was to have been acidized with 10,000 gal-

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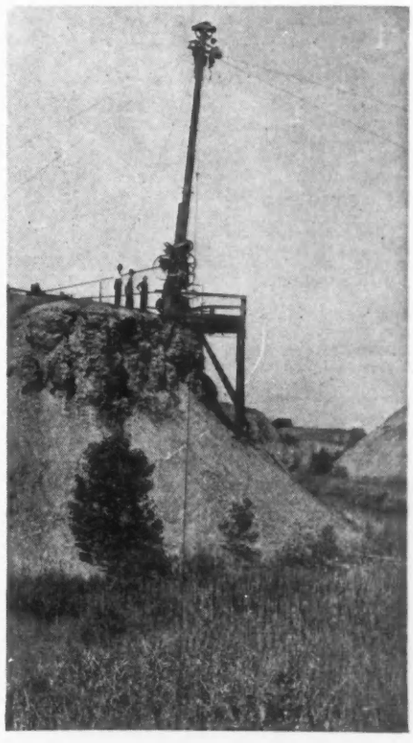

Cleaning out a well located on very little. The original well, drilled more than 12 years ago, produced from about 100 feet of sand, not all of which was saturated. At a later date coal stripper operators skirted the well head, leaving it on an isolated point with little to support the present clean-out rig.

lons, bringing total acid treatment to 31,000 gallons. The well had been producing at a fair rate, making 118½ barrels of oil through 2½-inch choke in 24 hours. Gravity was 43, coming from a total depth of 7955 feet.

Carter Oil Company's Carter-Harley 1, CNW NW 19-2s-3w, was coring ahead from 5467 feet. In a core from 5447 to 5467 feet the well had a small show of oil.

In the West Frederick area of Tillman County, Indian Territory Illuminating Oil Company's Drumm 1, CS½ SW NW 32-2s-17w, was drilling ahead below 3052 feet in shale. On a drill stem test at 3016 feet it showed one-half barrel of oil and the same amount of water. The company's Darby-Community 1, CNE SE 29-6n-10w, was drilling below 6820 feet.

OKLAHOMA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO COUNTY—		
Ohio Oil Co., Bruce 4, nw sw ne 11-5n-9w	442	3880
CARTER COUNTY—		
Maxine Oil Co., J. R. Brady 5, ne nw se 5-2s-2w	23	1540
Roy Kyle, Daugherty 4, sw se sw 17-4s-2w	18	1652
COAL COUNTY—		
Phillips, P. W. Beck 1, se sw sw 6-1n-9e	*	5643
COMANCHE COUNTY—		
J. L. Replogle, Shull 1, sw sw sw 29-2n-10w	*	1100
CREEK COUNTY—		
Shaw, Doak & Hughes, Anthis 1, nw ne nw 25-17n-7e	¶3	2834
GARVIN COUNTY—		
Cox & Hamon, Tussy 3, nw sw se 31-1n-3w	*	3606
JEFFERSON COUNTY—		
Circle Oil Co., Seay 62, ne ne ne sw 3-7s-5w	20	1261
Bridwell-Continental, W. D. Seay "A" 10, nw nw ne 10-7s-5w	80	1242
KAY COUNTY—		
E. W. Jones, J. Dorsett 1, se sw nw 25-26n-1w	*	4267
Clark Nye et al, McCollough 3, nw sw se 5-28n-1w	200	3482
LINCOLN COUNTY—		
Gulf, Lea 3, nw sw sw 36-15n-2e (pb 5135)	42	5270
C. L. Carlock et al, Young 1, nw nw nw 23-15n-5e	*	4512
NOBLE COUNTY—		
Ohio Oil Co., Mastehers 1, nw ne ne 24-22n-2e (pb 4447)	25	4567
Continental Oil, Conway 13, nw se sw 16-23n-2w	3672	4297
Continental, Conway 14, sw se sw sw 16-23n-2w	3134	4297
OKFUSKEE COUNTY—		
Grimes et al, Ryan 1-A, nw nw nw 36-11n-9e	*	1543
Wells et al, Johnson 1, sw sw nw nw 35-11n-11e	*	1843
OKLAHOMA COUNTY—		
Clark & Co., Boleman 1 sw sw sw 14-12n-3w	173	6494
Southwest Pet. Co., Jackson 1, se se ne 35-12n-3w	420	6425
Ohio Oil Co., Rankin 4, sw se sw 31-14n-3w	80	6683
OKMULGEE COUNTY—		
McClellen, Warden 1-A, ne se nw 14-12n-12e	*	1352
J. Wise, Fife 1, se se ne ne 15-14n-12e	*	2723
OSAGE COUNTY—		
Norbla & Carter 1, nw ne se 2-25n-6e	*	2859
C. W. Titus Oil Inc. 1, se sw se 5-25n-6e (pb 2880)	80	2923
I.T.I.O. 17, se sw se se 25-25n-9e	30	2034
Shell Pet. Co. 3, ce½ w½ w½ ne 2-26n-7e	*	2598
PAYNE COUNTY—		
Amerada & Stanolind, J. B. Bennett 1, ne sw ne 31-19n-4e	*	4258
Home Gas Co., Blankin 1, ne ne ne 32-19n-5e (otd 3657)	*	3800

KANSAS FIELDS

Ness County wildcat making oil.

* * *

Stafford County test has saturation.

Wichita.—Nothing spectacular was reported in Kansas during the last week in 1937, but a steady run of drilling activity and one new pool with the strong possibility of another being opened, gave operators a brighter outlook on development for the new year.

The new pool was opened in Ness County at Continental Oil Company's Olson 1, SW NW NW 5-18s-25w, a mile north of the Aldrich pool. The well was hailed as a pool opener several weeks ago when it drilled through a show of oil at 4301 feet and again at 4309 feet. The Mississippi lime pay was found at 4314 to 4317 feet where the hole filled 1100 feet with oil. From 4317 to 4318 feet, however, a small show of water was encountered, and at 4325 feet it swabbed 100 barrels of oil and 2½ barrels of water. The test was plugged back to around 4315 feet for further testing.

The possible opener was in Stafford County at Fred Rust et al's Sims 1, NW SW SW 3-23s-11w, three miles southeast of production in the Richardson pool. The show of oil was in a core to 3705 feet, showing good saturation. Top of the lime was at 3702 feet.

Barton County

Another producer is in prospect for the Barton County portion of the Otis gas and oil pool. Test was Morgan, Flynn and Cobb's Arnold 1, NWc SW 19-18s-15w, one mile northwest of the town of Albert, which found good saturation in Reagan sand at 3535 feet. Casing was being run preparatory to drilling in. If completed as a commercial producer the well will prove some 13,000 acres of land there for both oil and gas production.

One mile south of production in the Vaugh pool of Russell County, Phil-Han Oil Company et al's Reinhardt 1, SEc SW 19-14s-14w, was at 3243 feet in Siliceous lime and reported 2500 feet of oil in the hole in 48 hours. Six-inch casing was being underreamed down to the top of the lime before production tests are started. The well went into the lime at 3236 feet.

In the extension area of the Chindberg pool of McPherson County, one half mile south, Pryor & Lockhart's Bixby 1, NEc SW 24-19s-3w, filled 75 feet with oil from Mississippi lime at 3015 feet and was shut down. The test is an offset to a 787-barrel producer recently completed.

Potential tests have been started at Atlantic Refining Company's McNaughton 1, NWc 27-24s-13w, which extended production three-quarters of a mile west in the McNaughton sector of the St. John pool of Stafford County. At 4091 feet in Siliceous lime, the well made 198 barrels of oil in two hours on initial tests.

Company, Well and Location	Init. Prod. Bbls.	Depth
PITTSBURG COUNTY—		
Phillips, Gilcrease 1, nw nw se 16-7n-12e	*	5760
Okla. Dist. Oil Co., W. Beeler 1, ne ne sw 7-7n-14e (pb 5000)	*	6126
PONTOTOC COUNTY—		
Magnolia, Mayhue 2, sw se ne 20-2n-6e	*	4278
Arrow, Banks 1, sw se se 16-2n-7e	160	4200
W. A. Delaney, Wheeler 1, sw nw sw 30-5n-8e	*	2515
POTTAWATOMIE COUNTY—		
Magnolia, Caudle 4, nw nw sw 13-7n-4e	124	3156
Denver P & R, Risenhoover 3-A, ne ne ne 14-7n-4e	40	3200
Risenhoover 4-A, ne se ne 14-7n-4e	30	3147
SEMINOLE COUNTY—		
Fleet & Osborn, Hattie, sw sw ne 25-5n-7e	*	4060
I.T.I.O., Livingston 3, nw se nw 15-8n-6e (otd 4150)	133	4197
Amerada & Stanolind, W. Davis 2, se ne ne 35-10n-7e	50	3694
STEPHENS COUNTY—		
George L. Pace, Gilsworth 12, sw sw nw 2-2s-8w (pb 2121)	*	2415
WAGONER COUNTY—		
Dillard et al, Fox 1, se se sw sw 17-17n-15e	*	1869

*Failures; †Junked; ¶Million cu. ft. gas.

Sedgwick County

W. G. Talbott and Harwood Drilling Company's Downs Estate 2, CNE NW 32-28s-2e, second well to show for commercial gas production in the Derby area of Sedgwick County, was shut down at 2240 feet in Stalnaker sand after casing off the gas sand at that depth. Water broke into the hole at 2101 feet after the sand had been found at 2185 feet. It was necessary to drill ahead for a casing point, then case off the water, which had shown in the hole at that depth once before. Downs Estate 2 is reported running 15 to 20 feet higher than the discovery well, completed at 2229 feet.

Another big producer has been completed in the Stumps-K.C. area of Ellsworth County at Skelly Oil Company's Zink 3, NW SW NW 32-17s-10w. Tested for 24 hours, the well made a potential of 7327 barrels of oil following acidization of Kansas City-Lansing lime from 2939 to 3020 feet. It is due north of Zink 1, also drilled by Skelly Oil Company, which was completed for 7604 barrels in 24 hours.

To the west, in the same area, Magnolia Petroleum Company's Ehly 1, NWc SE 30-17s-10w, was reaming to take a drill-stem test. Top of the Siliceous was at 3313 feet and was drilled to 3316 feet for a very small show of oil. Stanolind Oil & Gas Company's Stumps 1, SWc NE 30-17s-10w, reported 50 feet of oil in the hole

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in 48 hours, coming from 3281 feet in Siliceous lime. Top of the formation was found at 3273 feet.

In Barber County, southern Kansas, outlook was dark for Pryor & Lockhart's Pickens 1, CW½ E½ SW 34-30s-14w. Siliceous lime was found at 4665 feet, higher than was expected, and the well drilled to 4715 feet where it was shut down for orders when no show was reported in the lime. Only show has been in top of the Wilcox sand at 4578 feet. The test is 14 miles north of the Medicine Lodge pool.

Carter Oil Company was encountering some trouble at Hoglund 1, CW½ SW NW 8-17s-3w, in the Lindsborg area of McPherson County, last reported as coring ahead below 3554 feet. At 3507 feet, about 22 feet in the Simpson formation, a drill-stem test was made and when opened 25 minutes, showed 2600 feet of salt water and only a scum of oil.

KANSAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARTON COUNTY—		
Stanolind, Morrison "A" 3, se sw sw 27-16s-13w	1985	3419
Stanolind, Zugg 3, ne ne ne 34-16s-13w	44	3377
Louck et al, Radenberg 1, ne se sw 6-17s-12w	*	3518
Stanolind, F. Panning 8, ne ne se 3-20s-11w	311	3303
BUTLER COUNTY—		
Landon et al, McCaig 3, sw sw se 13-28s-6e	*	2796
COWLEY COUNTY—		
Murta-Wilson, Stuber 1, se ne ne 27-30s-5e	*	2915
McKnabb, Moon 1, sw sw nw 21-32s-5e	373	3082
Pryor-Lockhart et al, Brown 1, ne se se 34-33s-3e	25	3403
ELLIS COUNTY—		
Cities Service, Johnson 8, se ne ne 22-11s-17w	2310	3382
Colonial O&G, Albert 1, sw sw ne 31-12s-18w	*	3958
ELK COUNTY—		
Imo Oil, Pfrehm 1, cnw nw 18-31s-10e	*	2245
GRANT COUNTY—		
R. K. Wilson, Nan C. Sullivan 1, csw¼ 26-28s-37w	¶14	2722
Panhandle Eastern, Steveson 1, cen-section 24-29s-36w	¶4.5	2800
GREENWOOD COUNTY—		
Anderson & Reed, Errickson 1, nw nw se 17-24s-13e	60	1627
McPHERSON COUNTY—		
Frank et al, Dale 1, se nw ne 12-19s-1w	*	3471
E. B. Shawver, Karge 1-A, nw nw nw 21-19s-1w	214	3434
Gussman et al, Drum 6, sw ne ne 35-19s-2w	193	2953
Gulf, C. L. Stuckey 4, nw se ne 33-20s-3w	240	3455
Continental, O. C. Chanez 2, se sw ne 20-21s-1w	556	3334
PAWNEE COUNTY—		
Mid-Continent, G. P. Smith 1, nw nw se 13-20s-16w	284	3811
Phillips, Johnson 1, e½ ne sw 8-20s-19w	*	4417
RICE COUNTY—		
Continental, Wood 3, sw nw se 12-18s-8w	2028	3235
Skelly, Wm. Volkland 1 "B", nw sw nw 5-18s-10w	3986	3006
ROOKS COUNTY—		
Texa Trading Co., Brobst 1, sw sw ne 18-6s-19w	*	3639
Atlantic, McClay 2, ne nw sw 12-9s-17w	1240	3238
Craft et al, Zeigler 1, ne ne sw 8-10s-16w	*	3581
Ross Oil et al, Hancock Life Ins. 1, ne ne nw 5-10s-17w	*	3697
Producers, Tucker 1, sw se nw 23-10s-17w	*	3759
RUSH COUNTY—		
Schermerhorn, Schroeder 3, sw se se ne 36-18s-16w	477	3626
RUSSELL COUNTY—		
J. J. Hall, L. Miller 8, se sw nw 31-14s-13w	603	3151
Central Pet. Boxberger 1, sw se se 26-14s-14w	3049	3010
Natl. Ref., S. Reinhardt 4, se sw se 25-14s-15w	1165	3154
Cities Service, Titel 1, se se sw 12-15s-14w	1867	3115
Darby, Michaelis 7, sw sw se 36-15s-14w	1243	3319
Texas, Brandenburg 5, sw sw nw 21-4s-14w	1197	3050

Clark County

South of the Morrison oil and gas area in Clark County, two wildcats were drilling slowly ahead with nothing showing. Olson Oil Company et al's Watkins 1, CSW NW 23-32s-21w, had top of the Viola lime at 6399 feet and was drilling at 6425 feet. Olson Oil Company's Lehman 1, CSE SW 20-32s-21w, topped Lansing lime at 4304 feet and was drilling ahead below 4700 feet.

Stanolind Oil & Gas Company's Jantz 1, SWc 25-20s-16w, south of production in the Pawnee Rock pool of Pawnee County, which drilled 3820 feet in Siliceous lime found only very small shows of oil.

Seven-inch casing was being run at Stanolind Oil & Gas Company's George Walker 1, NEc SW 33-21s-12w, southeast of production in the Sittner pool of Stafford County. At 3625 feet in Siliceous lime, operators had some oil saturation in a core. Top of the formation was found at 3622 feet, and the casing was being set at 3620 feet.

A poor showing was reported from Shell Petroleum Corporation's Eckart 1, SEc SW 13-16s-14w, northwest of Susank pool in Barton County, which made one barrel of water from Siliceous lime at 3413 feet. Drilling through about 20 feet of the formation has not improved appearances of the test. It is three-quarters of a mile southwest of the Trapp South pool, and 1¼ miles south of a recent dry hole in Section 12-16s-14w.

Forty-five Kansas tests completed

Wichita.—Of the 45 wells completed in Kansas last week, 24 were for oil, with an initial production of 23,601 barrels. Three gas wells made 28,500,000 cubic feet of gas, and there were 18 dry holes. First reports totaled 23, with Russell County having 8; McPherson and Ellis 4; Barton and Trego 2, and 1 each for Harvey, Marion and Sedgwick Counties.

Company, Well and Location	Init. Prod. Bbls.	Depth
SCOTT COUNTY—		
Atlantic Ref., Dague 3, e½ ne nw 14-20s-33w	143	4642
SEDGWICK COUNTY—		
Dickey, Heath 2, sw ne nw 20-28s-1e (otd 3150)	*	3547
STAFFORD COUNTY—		
Wakefield et al, Snider 1, se se nw 3-21s-11w (pb 3334)	*	3372
Pure Oil Co., Reeme 1, sw sw sw 27-21s-12w, (pb 2645)	*	3689
Torry Feaster et al, Landerman 1, sw sw ne 23-32s-12w	*	3689
Stanolind, Grace Woodsack 1, sw sw ne 4-25s-11w	*	4089
STEVENS COUNTY—		
Panhandle Eastern Parsons 1-9, center ne¼ 9-31s-37w	¶10	2773
SUMNER COUNTY—		
R. J. Wixon et al, Newton 1, se se se 21-30s-2e (otd 910)	*	3600
WOODSON COUNTY—		
Pure Oil, Stevenson 10, cs½ n½ 5-24s-14e	8	1739
Saco, Hassenflug 3, ne sw nw 34-25s-14e	*	1520

*Failures; †Junked; ¶Million cu. ft. gas.

ILLINOIS DEVELOPMENTS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BOND COUNTY—		
Commercial Oil Co., Dotrey 2	*	960
CHRISTIAN COUNTY—		
Parshall-Graham Oil Co., Yockey 1.	*	3005
Nokomis Oil Co., Glass 3	*	1052
CLAY COUNTY—		
Pure, Travis 3	460	2978
B. W. Moseley 1A	123	3012
Leon Clark 2	103	3040
H. Scrugham 1	82	3014
C. Wilken 7	75	2992
Wiser Oil Co., D. Smith 7	3	3020
Bonnie Oil Co., Schnautz 1	*	3072
CLINTON COUNTY—		
W. C. McBride, Inc., J. S. Schutte 1	*	1235
MARION COUNTY—		
Adams O & G Co., Wasem 10A	65	1423
Hampy 1	55	1425
J. Staley, M. Simcox 1	37	1455
J. M. Conray et al, Thalman 1	*	1728
Kirk D. Holland, Gordon 1	*	1470
Alexander et al, Allison 3	*	1482
Palmer et al, Edwards 1	*	1530
RICHLAND COUNTY—		
Pure, Frances Coen 1	1290	3000
Palmer 6	807	2980
E. Shannon 1	235	3000
Carter, Watkins 4	503	2993
DeKalb Oil Co., Sonner 1	750	2960
Hoffman et al, Hanna 1	220	3000
Godlin & Huffman, Garrett 1	30	2975

*Failures; †Junked; ¶Million cu. ft. gas.

TEXAS PANHANDLE AREA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
L. R. Hagy, Marsh & Harrington, Urbanczyk 1	¶28.7	2740
GRAY COUNTY—		
Bobuck Oil Co., Catlin 5	533	3247
Cities Service, J. F. Meers 3-C	380	3275
J. G. Noel 5	552	3275
Dye et al, Meers 2-A	547	3258
Meers 4-A	561	3247
Kewanee Oil Co., Morse-Adams 6-A, sec 3	393	2548
Magnolia, W. W. Merten 19-B	211	3237
Manana Prod. Co., Saunders 1	697	3262
W. J. & J. J. Moran, Osborne 1	¶4.2	2922
Stanolind, J. M. Saunders- Magnolia 4	398	3052
Stanolind & Miller, A. Waggoner 10	266	3284
HARTLEY COUNTY—		
Canadian River Gas Co., Lee Bivins 22-A	¶3.5	3635
HUTCHINSON COUNTY—		
Alma Oil Co., J. A. Whittenburg 2-C, sec 18	450	3004
Barnsdall, Lewis 7	749	3008
J. E. Crosbie, H. W. Pitts 26	655	2950
Drilling & Explo. Co., Haile 14	418	3120
Haile 15	364	3105
J. R. Philips et al, Twichell 2	594	3100
Stanolind, Haile 10-A	409	3100
Haile 9-B	132	3046
MOORE COUNTY—		
Phillips, R. Ainsley-G. Pratt 1-A	¶50.6	3656
WHEELER COUNTY—		
Lone Star, W. P. Rodgers 1	*	2265

*Failures; †Junked; ¶Million cu. ft. gas.

DAVID R. MITCHELL, of the University of Illinois, has been appointed head of the department of mining engineering at Pennsylvania State College. A Penn State graduate of 1924, Prof. Mitchell will assume his new duties at the end of this academic year.

EASTERN FIELDS

Thirteenth well completed in historic Harvey field.

* * *

Kentucky drilling activity continues gain.

Pittsburgh.—Charles Mong et al brought in the thirteenth successful completion since revival two years ago of the historic Harvey field of Center Township. Greene County, Southwest Pennsylvania, when production estimated at 50 barrels daily was obtained from the Ninevah Thirty Foot sand with J. L. Metz 2. The sand was topped at 3203 feet, and drilled several feet to production on December 27. South Penn Oil Company and Carnegie Natural Gas Company have rigs up for tests in the field. With the exception of Kentucky, where producers of 100, 75 and 50 barrel yields were reported, the Harvey field test was the largest in the Eastern Fields last week.

Several tests were completed in the Oriskany gas field of Kanawha County, West Virginia, and two in the Oriskany area of New York-Pennsylvania. West Virginia Gas Corporation's E. Fisher et al, in Poca District, Kanawha County, topped the sand at 4964 feet and gauged 12,870,000 cubic feet when completed 10 feet in the Oriskany. Other completions in this area were smaller. In the New York-Pennsylvania area, the Woodhull Township field of Steuben County, continued to command attention for the New York side. Completions by J. Becker and the New York State Natural Gas Company brought to 19 the number of successful tests in this township, opened only a few months ago. The Becker test was on the F. Sly farm, topped the Oriskany at 4071 and had an open flow of 20,000,000 cubic feet when bottomed 15 feet in the sand. The New York company's Chester L. Bonham 1, encountered the sand at 3987 feet and was good for 5,000,000 feet when completed at 4004 feet.

New York-Pennsylvania

A survey of current operations in the New York-Pennsylvania deep sand gas areas reveal five tests in the Onondaga limestone, all of which should complete during the month. Two of them are in the Woodhull Township field and one in Troupsburg Township, of Steuben County, while the remaining two are in Potter County, Pennsylvania. In addition, there are nine active locations in Steuben County, seven of which are in Woodhull Township; three in Allegany County and one in Schuyler County on the New York side, while on the Pennsylvania side there are four more in Potter County, three in Warren County and one in Venengo County. The Warren and Venengo County tests are wildcats.

Drilling activity continues to gain in Kentucky, where 24 tests were completed last week. Ten of the week's completions were oil wells with average production of 38 barrels daily, five were gas wells, one was a pressure hole and 8 were failures. Largest completion was that of Petroleum Exploration Corporation on the Pryse Heirs tract, in Ida May district, which had initial production of 100 barrels daily.

Pittsburgh school closed because of gas hazard

Pittsburgh, Pa.—Fearing an explosion similar to that which occurred at the New London, Texas, school, the department of labor last week closed the Hampton township school here following a report of Dr. J. B. Garner, of the Mellon Institute, who is director of a survey commission financed by Pittsburgh's public utility companies and charged with making periodic inspections of gas facilities of schools, churches and other public buildings.

"The presence of gas in your water supply and the presence of gas coming from lower strata outside the casing of the abandoned well in the school yard constitute a hazard to your school building unless provision is made to eliminate this condition," Dr. Garner told Cyril C. Sarver, principal of the school. He recommended that the school water tank be removed from the basement to the roof and that chimneys be erected on each of the gas heaters.

EASTERN FIELDS Completions

OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
ASHTABULA COUNTY—		
American Fork & Hoe Co., Pancost 1	*	1870
ATHENS COUNTY—		
Hocking Valley Drilling Co., N. Y. Coal Co. 3	*	3732
Kachelmacher O & G Co., Franks 1.	*	3382
COSHOCTON COUNTY—		
Hulse & Kuntz, Mosholder 3	10	3105
GUERNSEY COUNTY—		
Jones & Jewell, Davidson 1	*	1402
LICKING COUNTY—		
Geo. Vandergrift, Weigle 3	10	790
J. Bebout & Son, Eshelman 3	5	725
Chas. Egan, Pound 1	*	770
LORAIN COUNTY—		
Kline et al, Knapp 1	¶	1125
Wm. Dempsey, Alexander 1	*	2585
MEDINA COUNTY—		
E. R. Edson & Son, Ripley 36	16	464
MEIGS COUNTY—		
Barton et al, Molden 4	*	820
MORGAN COUNTY—		
W. S. Harris, Doan 34	¶20	1000
PERRY COUNTY—		
C. M. Foraker, Stafford Hrs 1	*	3520
PUTNAM COUNTY—		
Morton Stewart Pet. Corp., Williams 6	20	1405
SENECA COUNTY—		
A. J. West, Hunker 1	¶	1580
STARK COUNTY—		
East Ohio Gas Co., Greer 1	*	4683
SUMMIT COUNTY—		
East Ohio Gas Co., Bennage 1	*	4486
TUSCARAWAS COUNTY—		
Sandy Township Gas Co., Sattler 1..	¶.08	4800
WASHINGTON COUNTY—		
Knob O & G Co., Pryor 6	16	750
Dupuy Bros., Eppler 4	*	880

WEST VIRGINA

Company, Well and Location	Init. Prod. Bbls.	Depth
BOONE COUNTY—		
Pure, Williams Coal Co. 280	5	3275
CABEL COUNTY—		
United F G Co., Gill et al 4671	¶.18	3432
CALHOUN COUNTY—		
Hope Nat. Gas Co., Braddock-Hardman 7788	¶.05	2608
Chemical O & G Co., Fling 3	*	2500
Ira Connolly, Connolly	*	2223
GILMER COUNTY—		
Carnegie Nat. Gas Co., Rohrbough & Peters 1	10	1867
Wolf Pen Gas Co., Wolfe	¶.04	1770
KANAWHA COUNTY—		
Pure, Williams Coal Co. 279	15	3118
W V Gas Corp., Fisher et al	¶12.87	4974
Hays O & G Co., Humphreys & Good	¶8.27	4785
United Carbon Co., Spencer 1	¶2.18	5156
Columbian Carbon Co., Canender et al 1	¶.30	5162
Susan Hoge 6	*	4740
LINCOLN COUNTY—		
Orlando O & G Co., Cummings 1	¶.43	3484
MONONGALIA COUNTY—		
Pittsburgh & W V Gas Co., Sine 5232	*	2161
RITCHIE COUNTY—		
W. H. Bickel, Evans 1	¶.30	1985
ROANE COUNTY—		
United F & G Co., Willis et al 4775.	¶2.16	1500

KENTUCKY

Company, Well and Location	Init. Prod. Bbls.	Depth
BRECKENRIDGE COUNTY—		
Snowden & McSweeney, Morgan 1..	*	605
BUTLER COUNTY—		
Collins & Downey, Woodall 5	20	....
DAVIESS COUNTY—		
Gibson & Anknay, Bryant 4	25	1043
Frank Randall et al, Litsey	*	826
FLOYD COUNTY—		
Fred Williams, Woods 1	¶2.00	1510
Stanley Heirs 5	¶.10	2790
Kentucky-W V Gas Co., Ingram Stepp 557	¶.37	2690
GRAYSON COUNTY—		
A. V. Smith et al, Green 6	¶.25	320
HANCOCK COUNTY—		
Taylor Bros., McDaniels 4	15	670
C. D. Walker et al, Gray 2	*	535
W. E. Hupp, Falls 7	P	460
KNOTT COUNTY—		
Southeast Gas Co., Combs & Allen 1	¶3.01	1420
LEE COUNTY—		
Petroleum Explo Corp., Pryse Hrs 16	100	....
C. E. Townsend, Combs 13	20	938
McCinn & Wissing, Combs 8	15	1122
McLEAN COUNTY—		
Matthews & Preston, Howell 3	75	1161
W. E. Hupp, Hackett 33	50	....
J. C. Miller Tr., Fitzhugh 1	*	1226
MARTIN COUNTY—		
Hale et al, Hardin 1	*	2803
OHIO COUNTY—		
B. & B. Oil Co., Westerfield	40	750
Rex-Pyramid Oil Co., Stinnett 15..	20	630
Joseph Mayers et al, Brandon 4	*	....
New Deal O & G Co., O'Dell Hrs 13	*	....
WEBSTER COUNTY—		
Imperial O & G Co., Archibald 1	*	2550

Note: "P" in Hancock County test refers to Pressure well.

PENNSYLVANIA

Company, Well and Location	Init. Prod. Bbls.	Depth
BEAVER COUNTY—		
John T. Galey et al, J. Tennis Heirs 1	¶3.00	4613
GREENE COUNTY—		
Equitable Gas Co., P. D. Phillips 1..	¶.13	3580
Smith McCracken, Asa Hughes 1..	¶.08	3175
WASHINGTON COUNTY—		
F. K. Fawcett et al, B. T. Bonhan 1	10	3125

NEW YORK

Company, Well and Location	Init. Prod. Bbls.	Depth
STEUBEN COUNTY—		
J. Becker, Fred Sly 1	¶20.00	4086
New York State Natural Gas Co., C. L. Bonham 1	¶ 5.00	4004

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH TEXAS FIELDS

K-M-A northwest outpost well makes prolific producer.

* * *

East and southeast extensions make weaker showings.

Wichita Falls, Texas.—Prolific oil yield from a northwest outpost for the K-M-A deep field, Wichita County, furnished a surprise development that stimulated the demand for high-priced leases. This extension was drilled by King Oil Company's Waggoner Bros.-Gulf 1, Lot 8, M. A. Willis Survey, A-548, and is credited with having flowed 137 barrels of oil in 32 minutes from Strawn sand at 3792 feet after being shut in overnight for storage. It is 7000 feet northeast of a small pumper on the same ranch, and 13,500 feet northwest of King Oil Company's Mitchell 1, producer on the north bank of the river.

King Oil Company's northwest extension registered a high structural position in logging top of big lime at 3652 feet. Sand with 3 thin shale breaks cored at 3761-84 feet before cementing pipe, yielded 150 barrels of oil in 14 hours after drilling plugs with tools. Greater volume of gas than usual was noted in this zone. The big flow was developed in drilling 8 more feet of sand to 3792 feet.

T. L. Wynne, Trustee's Waggoner Bros. 1, Lot 36, H. George Survey, 1⅓ miles east by south of the above well, occupies a lower structural position, and failed to log oil saturation in upper section of the lime, topped at 3729 feet, with an elevation of 1037 feet. Sand found at 3876-79 feet forecasts a producer, and operations were halted to cement pipe.

East and Southeast Doubtful

East and southeast outpost tests were listed as doubtful producers the past week. E. J. Stump et al's M. P. Bishop 1, L. Netherly Survey A-240, about 10,000 feet southeast of nearest production and the most easterly project, logged broken lime, carrying oil saturation at 3884-3952 feet, followed by shale to 4043 feet. Hole filled 25 feet with oil in 12 hours, and no water was present. Owners plan to plug back and shoot. Top of big lime was logged at 3795½ feet, with an elevation of 1025 feet. Burk Royalty Company et al's W. L. Warren 1, near northeast corner of Block 32, KWVFL Survey, southeast of the main field and 1 mile south of flowing production, logged top of big lime at 3775 feet, with an elevation of 1013 feet, and no shows were recorded in coring sandy-lime and shale to 3890 feet. Burk Royalty Company's Hodges 1, Lot 8 H&TB Section 1, A-139, east flank producer that has been in process of completion since nitro shot in Strawn at 3899-3932 feet in mid-December, flows 50 barrels hourly by heads on short gauges.

King Oil Company-Perkins-Collum Oil Company's C. A. Mangold 1, Block 38, P. Castleman Survey, A-35, west offset to the first big natural producer in the west portion of the field, flowed 100 barrels hourly average for 6 hours with tools in the hole after drilling oil sand at 3690-3727 feet. Top of big lime was called at 3624 feet, with an elevation of 1025 feet.

Acreage along the north flank of the K-M-A deep field is beginning to share in the large lease bonuses. Edward McFarlin et al paid $1000 per acre, half cash and balance from production, to J. L. and T. J. Waggoner, land owners, for lease on Blocks 20 and 26, H. George Survey, A-454, aggregating 80 acres. The tract is on a line between King Oil Company and T. L. Wynne, Trustee's wells. E. C. Laster, East Texas producer, assumed a drilling obligation in acquiring lease on 31¾ acres out of the J. A. Watkins land, H. Balch Survey, A-12, east by south of production, for $500 per acre, half cash.

Selby Oil & Gas Company added to its holdings on the west edge of the field through the purchase of Seitz, Comegys & Seitz, Inc.'s E. H. Hamilton 137-acre lease, E. Durain Survey, A-53, north of the river, for a reported consideration of $80,000 cash and $100,000 payable from production.

Exploration of outlying acreage shifted to the northwest when Rathke Oil Company et al's S. B. Burnett-Gulf 1-A, near NEc W½ NE HT&B Section 4, A-572, about 4¾ miles northwest of King Oil Company's Waggoner Bros-Gulf 1. Ten-inch surface pipe was cemented at 69 feet with machine, before setting up rotary. This outpost is a quarter mile from Gulf Oil Corporation's Burnett 43, which failed to make a commercial producer from the Strawn in 1929, and was plugged back to shallow sand. Burnett 43 was drilled with cable tools, and developed 350 feet oil in hole at 3617-43 feet, with an elevation of 1125 feet. Water appeared at 4045 feet, and a hole full of water developed at 4217-91 feet. Hole was plugged back for 200-quart nitro shot July 24, 1929, at 3598-3650 feet, resulting in 900 feet of oil in the hole in 24 hours. Production was not sustained on swabbing tests.

Deep Drilling Spreads

Deep drilling is in prospect for a large section of the North Texas district, and Clay County, oldest producing area, is destined to obtain a share in the development, as the Canyon and Strawn produces high gravity oil in the Worsham area. Barnett Petroleum Corporation is starting operations on Nutter Estate 1, NWc Section 30, Grayson County School Lands, 2 miles north of Blue Grove, and in the west central part of Clay County. The company holds lease on a block of 2100 acres, and is contracted to drill to 4000 feet.

F. P. Hynes et al's C. S. Lee 1, near C SE NE Section 1, AB&M Survey, 5 miles southwest of Paducah, Cottle County, fulfilled depth contract in drilling to 5008 feet, and shut down early last week. Top of Wichita-Albany lime was logged at 2880 feet, and top of lower Canyon at 4770 feet, with an elevation of 1910 feet. H. F. Wilcox Oil & Gas Company has rigged up to drill a 5000-foot test in Cottle County on a block of 26,500 acres. Location is on the J. J. Richards-Parr tract, NE NE NE of W&NW Section 761, Block H, 8 miles northwest of Dunlap.

Discovery of deep-lime production in northwestern Jack County, near the Clay County line, was in prospect last week. Lee C. Harrison et al's L. S. Wright 1, near NWc E½ Z. S. Brooks Survey, A-64, 2 miles northwest of Antelope, encountered gas at 4696 feet, and drill pipe stuck in coming out with 4-foot core below this depth. Rotary returns showed oil in circulating to free stuck pipe.

NORTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
Dick Duncan & Marchman, N. I. Andrews 13, blk 18	*	996
Wayne King et al, D. D. Strange-Perkins 1, sec 47	*	990
A. P. Lieser et al, W. E. Brown 1, sec 2421	5	1415
ARCHER COUNTY (K-M-A)—		
H. A. Schaeffer Oil Co. (was E. C. Norwood), W. P. Ferguson 1	999	3885
GRAYSON COUNTY—		
Pearson Tubing Co., J. H. Thompson 1	*	4507
JACK COUNTY—		
J. B. Burrows et al, W. J. Fatherly 1	*	3340
Barney Cockburn Oil Co., J. C. Enloe 3-A	246	3236
B. Cockburn & Harper, R. R. Clayton 6	363	3180
R. H. Dearing et al, S. M. Jones 8	203	3237
B. P. Farris et al, J. M. Bloodworth 1	2	470
Hanlon-Buchanan, Inc., F. H. Rhodes 3-A	250	2925
C. A. Worthington 1-A	75	2369
Moncrief & Showers, Inc., J. G. Enloe 1	237	3202
Yorktex & States Oil Corp., D. C. Clayton 4-B	304	3015
D. C. Clayton 5-B	23	3092
MONTAGUE COUNTY—		
Continental, Seitz-Comegys & Seitz, J. B. Roach 1	*	2376
WICHITA COUNTY (K-M-A)—		
Wichita Cotton Oil Co., Fee 1 (5-ac)	2100	3730
WICHITA COUNTY—		
Hawkins-McQuigg Oil Co., E. E. Goetze 15	1	623
Geo. Proctor et al, Foster-Allen 23-A, sec 1	12	1113
Erwin Schwegler et al, E. E. Goetze 5	2	880
YOUNG COUNTY—		
T. D. Humphrey, W. J. Dodd 1, sec 647	594	3960
Knox & Clay, Mrs. Wilmot Robertson 1	2400	3616
Lupton & Long, W. I. Gilmore 1, blk 76	*	4105

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS FIELDS

Preliminary show in Hockley test indicates production.

* * *

Linking on Jordan with Gulf-Waddell field is indicated.

Midland, Texas. — Intermediate test along the two mile interval that separates the two flowing producers in the Slaughter pool, southwestern Hockley County, is showing a greater oil yield from the upper section of the Permian than the earlier completions. The Texas Company's Bob Slaughter 2, SEc Labor 92, League 37, flowed 35-barrel heads every 5 hours from lime at 4958-70 feet, with an elevation of 3531 feet. Fluid was swabbed down, and the well produced 77 barrels oil in 6 hours swabbing and flowing. Hole will be deepened to about 5000 feet, then acidized for completion.

Development of the Slaughter area has direct bearing on the proposed entry of the Texas-New Mexico Pipe Line Company with a pipe line extension north from Crane Station to the upper section of the Permian basin. The Texas Company discovered the area last April and holds lease on most of the close-in acreage. Stanolind Oil & Gas Company extended production to the east by south, and Sid W. Richardson et al's Slaughter 1, drilling at 1200 feet, is 2 miles north of the discovery.

Stogner & Pipkin's Blades-Pollard 1, northwestern Yoakum County wildcat, previously reported as showing oil saturation with a high structural position for the area in drilling to 5266 feet, was preparing to run 7-inch pipe late last week.

Confronted with lease expirations on two sections in the east portion of the Yoakum County section of the Wasson field, Shell Petroleum Corporation is starting tests on each. George Baumgart 1-B is a west offset to the company's Baumgart 1, which provided a 1¼-mile northeast extension with a flow of 426 barrels of oil in 20½ hours after using acid at 5000 feet. Baumgart 1-C, located 1320 feet from north and 2200 feet from east lines of Section 866, is 1½ miles southeast of the outpost producer. All of the company's wells are spaced so as not to precipitate a line fight.

Drilling a fifth test in the Bohago area, single-well pool uncovered last year five miles north of Wasson production and apparently in a lower section of the lime, Bond Oil Corporation and Bohago Oil Corporation have rigged up to drill J. L. West 1, SEc Section 607, Block D, 1½ miles southeast of their small pumping discovery. Ohio Oil Company is drilling a test in NWc Section 638. Tests drilled to the northwest and southwest of the producer were failures.

Purchases of an 1800-acre checkerboard block by Sinclair Prairie Oil Company in Ector County about midway between the Judkins and Harper fields at prices ranging from $5 to $10 per acre is to be followed by a test, according to reports. The acreage is immediately west, south and southeast of a failure drilled by Honolulu Oil Corporation et al in Section 33, Block 44, T-2-S.

Linking of the Jordan field, Crane County, with the Gulf-Waddell field is forecast by the favorable structural position recorded by Gulf Oil Corporation's Henderson 11, SE NE NW PSL Section 4, Block 23, in drilling to 3130 feet. It is checking leved with The Texas Company's University 1-D, first big producer in the Jordon field. The Jordan area was definitely tied to the Judkins field, Ector County, recently by series of completions on intermediate acreage, and Henderson 11 points to the hookup of a third area.

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CRANE COUNTY (Jordan)—		
Fogelson et al, University 3-D	535	3580
University 4-D	565	3580
CRANE COUNTY (McCamey)—		
Continental, Hughes 8-D	407	2396
ECTOR COUNTY (Foster)—		
Barnsdall, Foster 6	1063	4175
ECTOR COUNTY (Goldsmith)—		
Atlantic, Slator 4	806	4295
Devonian, Scharbauer 4-C	1067	4214
Landreth Prod. Corp., Scharbauer 3-K	722	4221
ECTOR COUNTY (Harper)—		
Honolulu Oil Corp.-W. A. Black, E. F. Cowden 3-A	586	4291
ECTOR COUNTY (Judkins)—		
Gulf, Connell 13-B	718	3700
Texas Co., Connell 19	426	3675
ECTOR COUNTY (North Cowden)—		
Stanolind, Cowden 62	548	4263
Cowden 67	464	4320
GAINES COUNTY (Wasson)—		
Continental-A. G. Carter, Wasson 3, sec 48	961	4982
HOWARD COUNTY—		
Ajax Drilling Co., Snyder 1	507	2926
Shell, T. P. Land 1	396	2900
JONES COUNTY—		
Humble, Hollums 1	2500	3224
McCULLOCH COUNTY—		
Salt Gap Drl. Co., Ward 1	*	1885
PECOS COUNTY (Pecos Valley)—		
C. S. Messinger et al, L. L. Byrne 3	25	1373
PECOS COUNTY (Taylor-Link)—		
B. C. Mann et al, University 3-A	190	1646
UPTON COUNTY (Gulf-McElroy)—		
Gulf, McElroy 163	461	2889
UPTON COUNTY (McCamey)—		
Acme Oil & Roy. Co., Shirley-Conoco 1-B	720	2222
Peerless Oil Corp., Shirley-Conoco 2	408	2245
Glen J. Smith et al, A. S. Burleson 11	245	2167
T. P. Coal & Oil Co., M. Shirk 10-D	227	2327
WARD COUNTY—		
Gulf, G. W. O'Brien 90	778	2770
Hutchings Stock Assn. 86	1117	3080
Hutchings Stock Assn. 92	872	2765
Illinois Oil Co., Roach 2	94	2602
Standard (Texas), McFarland 21, sec 37	234	2551
WINKLER COUNTY (Henderson)—		
W. K. Royalty Co., Walton-Humble 6-A	4500	3014
WINKLER COUNTY (Kermit)—		
Atlantic-J. D. Collett, Hendrick 1-L	353	3075
Humble, N. R. Colby 11-B	461	3052
N. R. Colby 24-C	1427	3075
J. B. Walton 5-D	778	2990
Magnolia, J. B. Walton 117	401	2930
J. B. Walton 119	866	2900
WINKLER COUNTY (Keystone)—		
A. G. Carter et al, Walton-Pure 19	¶17	2980

*Failures; †Junked; ¶Million cu. ft. gas.

Crane County wildcat indicates favorably

San Angelo, Texas.—The Ordovician structure in the Sand Hills area, western Crane County, was encountered at a normal depth 2¾ miles northeast of production by Gulf Oil Corporation's M. B. McKnight 3, near C NE of PSL Section 9, Block B-21. This development materially adds to the deep oil and gas possibilities of the area as the Ordovician prevails at an unusually high structural position for 5 miles along a northeast-to-southwest trend. McKnight 3 logged top of the Simpson, or middle Ordovician at 6079 feet, or 3386 feet sub-sea, being 10 feet lower than the same marker on the company's Waddell et al 2, nearest producer. The northeast outpost was coring at 6113 feet, with first saturation due near the 6200-foot level.

Completion of a producer by the McKnight test could precipitate a drilling campaign, as the lease ownership in sections adjoining to the east and west is divided into small tracts and held by other companies and individuals. However, Gulf Oil Corporation holds lease on 3 solid rows of sections between the outpost and the most productive portion of the Ordovician. The above company is preparing to spud Waddell et al 7, C SW SE PSL Section 4, Block B-27, south offset to Waddell et al 5, which flowed 8179 barrels natural from Ellenberger at 5954-5971 feet. Waddell et al 6, west offset to the big well was a failure in Simpson, topped at 5820 feet, and in Ellenberger at 6071-6126 feet. Loffland Bros. Company's Reidland 1, SEc of PSL Section 2, Block B-27, east outpost Ordovician project, is fishing drill pipe at 5434 feet. In northwestern Crane County, Wilcox Oil & Gas Company's McKnight 1, C SE NW Section 9, Block 46, was drilling Permian lime at 6890 feet, with the Ordovician as its objective.

Pecos Wildcat Resumes

Drilling was underway late last week on Magnolia Petroleum Company et al's McKee 1-a, H&GN Section 24, Block 9, northern Pecos County wildcat, after being idle since early November at 4928 feet in Simpson, topped at 4775 feet, or 2390 feet sub-sea. No shows were recorded in drilling to 4950 feet. It is on a geological trend to the south by east of the Sand Hills structure, and caused a hot lease and royalty play immediately after picking up the Simpson at a high level.

Moore Bros. Corporation's Paul Perner, western Crockett County Ordovician project, was drilling at 8145 feet in shale after fulfilling original 8000-foot depth contract earlier in December. Companies that purchased lease spreads against this deep test shared in the deepening costs.

EAST TEXAS

Anderson County Woodbine wildcat showing for gas well.

* * *

Lower Marine test at Mexia having mechanical trouble.

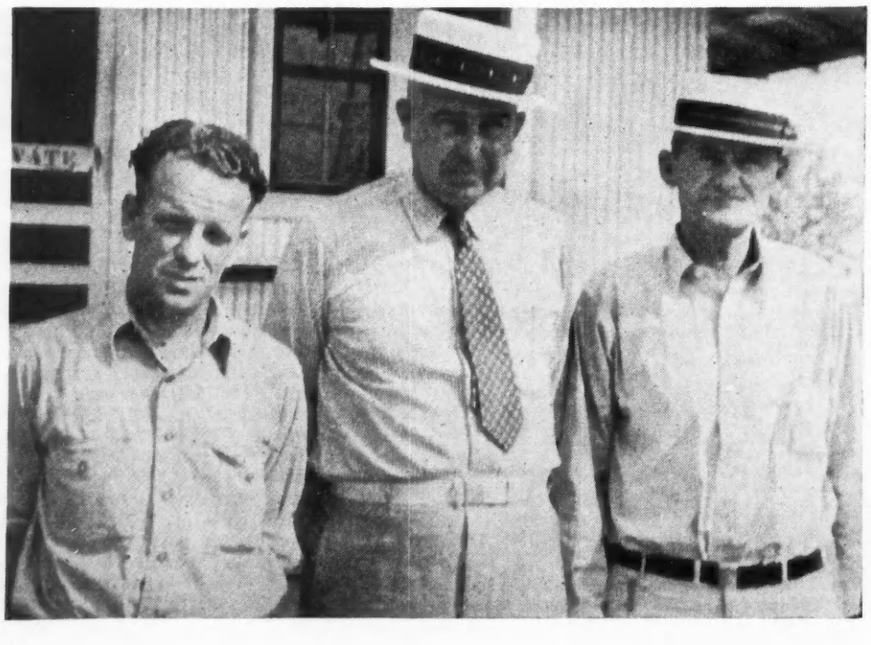
Tyler, Texas.—A wildcat gas strike from the Woodbine in southwestern Anderson County is indicated by showing recorded by H. L. Parsons et al's H. B. Hemby 1, John Gossett Survey, 5 miles southwest of Elkhart, and the test is to be cored below 5407 feet to try for oil production. Top of Woodbine was logged at 5360 feet, with an elevation of 263 feet. Sufficient gas to indicate the probable completion of a commercial gasser was evident on drill-stem test at 5395-5407 feet. Hemby 1 occupies a high structural position as Gulf Oil Corporation and Humble Oil & Refining Company's O. G. Rogers 1, Daniel Parker Survey, 1 mile to the east, logged top of Woodbine at 5486 feet, with an elevation of 301 feet, and abandoned May, 1935, in water at 5519-5773 feet.

Threat of a gas blowout from the lower Trinity series required the use of weighting material by Humble Oil & Refining Company and Gulf Oil Corporation's Robertson 1, Gregg County wildcat 4 miles east of the East Texas field, and coring was resumed at 7650 feet. Regular rotary mud was diluted by heavy rainfall, and the well was held in check with difficulty. Gas passed up in lower Glen Rose and also the Travis Peak, topped at 7325 feet, has not been cased off, and either zone could be source of the pressure. Owners propose to continue to the lower Marine, then will run pipe and plug back for a gas completion, if the deep level is barren of production. High pressure gas production in close vicinity of the East Texas field will be a valuable asset in later years.

Mexia Test Having Trouble

Initial try for production in the lower Marine by a prospect in the East Texas Woodbine basin proved disappointing, although it was revealed that the little-known zone is made up of sedimentary rocks that could yield production. Pure Oil Company's Kendrick 16-T, Mexia field, penetrated 1171 feet of the lower Marine in drilling to 8847 feet, where drill pipe was twisted off, and has plugged back to 6184 feet to progressively test for gas in the Travis Peak and lower Glen Rose. Kendrick 16-T logged 2020-foot section of Travis Peak, topped at 5656 feet. Completion of a failure will probably wind up the search for deep production at Mexia. Stanolind Oil & Gas Company and Ramsey Petroleum Corporation's Norris 1, Thornton fault area, Limestone County, was drilling at 7295 feet, or 1767 feet in the Travis Peak series. It is likewise headed for the lower Marine.

Geological markers on Walter L. Goldston and Normandie Oil Corporation's Smith 10, first lower Trinity project for the Sulphur Bluff field, Hopkins County, are being withheld because of the refusal of majors holding leases in the area to contribute to the drilling cost. Drilling was in progress at 5700 feet, or within 300 feet of the projected water level in the lower Glen Rose. The fault plane was cut above the Paluxy zone, topped at 4499 feet, and the test should encounter a full section of the lower Trinity.



Left to right: R. M. Bradbury, J. L. Hicks and G. W. Hillyer, respectively, superintendent of drilling and production, general superintendent in East Texas, and superintendent of pipe lines for Houston Oil Company of Texas. All have headquarters near Laird Hill.

Cass County project has Glen Rose objective

Shreveport.—Plans for a Glen Rose test to be drilled in the J. J. Potter Survey-Abstract 860—Cass County, Texas, two miles north of American Liberty Oil Company's G. Stephens 1, J. Carstner Survey, which showed gas and oil at 6084 feet, but was abandoned as a dry hole at 6113 feet in black sandy lime, were announced last week. O'Brien Brothers of Shreveport will have an interest and will drill the test.

Arkansas Fuel Oil Company continues to add to its holdings in Cass County, between Daingerfield and Hughes Springs and also has leased approximately 1800 acres near Douglassville around the E. Frazier, M. Ward, and adjacent surveys.

Gulf Oil Corporation continues to add leases around the Waskom area, Harrison County having recently taken leases in the F. O'Neal, J. Bland, L. Camp, William McAllister, and J. Shadoins Surveys.

In the Jefferson area, Marion County, Heyser, Heard and Clardy have secured a 97-acre lease of the Lizzie Henderson tract, U. Ewing Survey. In the Lodi area, Holcomb and Thomasson leased the 31-acre Fred Bohn tract, A. de los Santos Coy Survey.

A contemplated trade whereby Shell Petroleum Corporation would secure 3000 acres of Louis Werner Sawmill Company land in Panola County, is reported to have fallen through.

Shell Petroleum Corporation continues a series of core hole tests in northeast Sabine County. Gulf Oil Corporation's gravimeter unit working in that county has been transferred to Vernon Parish, Louisiana.

Texas permits to drill drop during holidays

Austin.—The Texas Railroad Commission this week granted 105 permits for drilling new wells in Texas, 154 less than were approved the week before.

There were 58 permits granted to operators in the East Texas field, including 28 in Rusk, 23 in Gregg, 5 in Upshur and 2 in Smith County. East Central Texas reported only 7 locations.

Operators in the Gulf Coast area were granted 16 permits, while Southwest Texas listed only 5.

There were 7 new locations reported from West Texas, and West Central Texas reported 6 locations.

North Texas operators listed 6 locations. There were no permits granted in the Panhandle district.

Shreveport.—Arkansas-Louisiana Gas Company's C. M. Abney 1, Eason Little Survey, Trinity test in the shallow Waskom gas field, Harrison County, blew out suddenly last week at 4820 feet in what corresponds to the Hill horizon in the Glen Rose at Rodessa, wrecked the derrick and ran wild for a time before bridging. The flow was estimated at 30 million feet of gas daily. The well will be killed and drilled deeper.

With elevation of 278 feet, this test logged top of first anhydrite stringer at 3825 feet, second anhydrite at 4183 feet and topped the massive anhydrite at 4338 feet.

EAST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Mike Despot et al, Deason 3 (5-ac)	600	3620
Gulf, W. O. Alford 11 (157.05-ac)..	800	3741
Humble, Joyner 8 (59.11-ac)	5600	3698
Price 56 (432.05-ac).....	7200	3692
Hunt Oil Co., Wooley 11 (53.15-ac).	1200	3782
Milford Oil Co.,Thrash 12 (30-ac)..	4000	3734
Jas. T. Smith et al, Frederick 5 (10.19-ac)	108	3678
J. B. Sneed & Co. (was Pete Sampson), G. Gossett 1 (4-ac).....	500	3681
Texas-Jersey Oil Co., Keeling 4-B (65/100-ac)	7800	3766
Ward Oil Corp., Thrash 34 (200-ac).	6500	3802
KILGORE AREA—		
Barnett Pet. Corp., I&GN 4 (3.9-ac).	7200	3641
Blanchard Oil Co.-Frank King, Scroggins-Republic 5 (50-ac).....	4800	3653
Bradley et al, King-Hilburn 13 (35-ac)	1500	3708
Devonian-Gulf, Motley 42 (442.1-ac).	5000	3708
H. W. Donnell et al, F. Buckner 1 (8.1-ac)	120	3781
Gulf, Muckelroy 30 (152.05-ac).....	9700	3565
Humble, Knowles 27 (100-ac)	4500	3607
T. J. James & Co., Lacy 17 (21½-ac)	3600	3597
T. A. Johnson & Owens, Cole 9-C (29.73-ac)	10400	3532
Magnolia, Hale 12 (50-ac)	240	3602
Meco Prod. Co., Williamson 14 (150-ac)	1500	3698
Overton Ref Co., I&GN 18 (19.58-ac)	3000	3561
Santex Pet Co., L. Morse 7 (11.26-ac)	6000	3625
Sun, Hilburn-Loyd 36 (133.7-ac)....	5000	3644
Beall 27 (180-ac)	7000	3585
United E&W Oil Co., Benson 5 (47-ac)	500	3660
LONGVIEW AREA—		
Amerada, Killingsworth 18 (100-ac).	8800	3600
General American Oil Co., Sanders 12-B (59.88-ac)	3000	3665
Humble, Smith 39 (245.98-ac).....	7200	3671
Magnolia, Beavers 10 (73¾-ac).....	9500	3555
Christian 20 (64.95-ac).....	9600	3660
Free 31 (169.3-ac)	4500	3715
W. L. Pickens et al, Wells 13 (40-ac)	4000	3712
Shell, Moore 10 (47.73-ac).....	10000	3578
Moore 11 (47.73-ac)	9800	3598
E. N. Smith et al, Landers 3 (3½-ac)	4200	3706
Stanolind, Jones 8-A (30.58-ac).....	8500	3696
Stuckey-Thrasher 11-A (40.37-ac)..	7200	3596
Sun, O'Byrne 21 (310-ac).....	300	3707
Tide Water, Tenery 6 (17.9-ac)....	4800	3597
ANDERSON COUNTY (Cayuga)—		
Tide Water Associated-Seaboard Oil Corp, Wills 4-B (377.1-ac).....	2000	4084
FRANKLIN COUNTY (Talco)—		
Housh & Thompson, Owings 9 (109-ac)	367	4270
Humble, King 51 (1053.36-ac).....	341	4307
Magnolia, Maxton 4 (326½-ac).....	60	4306
TITUS COUNTY (Talco)—		
Humble, King 54 (1053.36-ac).....	92	4313
Monnig Dry Goods Co. 10 (114.4-ac)	313	4322
Pan-American Life Ins. Co. 4 (80-ac)	193	4333
Magnolia, Mainard 15 (130¾-ac) ..	357	4309
Scott Bros. et al, Edwards 1-C (2½-ac)	104	4304
LIMESTONE COUNTY—		
C. L. Brown et al, Boyd 27.....	*	1558

Considerable activity expected from Calallen strike.

* * *

East Premont will be large field, is belief.

Corpus Christi.—The Gulf Coastal trend of South Texas started the year with a very bright outlook for new development, largely the result of two apparently important discoveries in 1937. The dying Saxet boom undoubtedly will be replaced by a drilling program in East Premont and Calallen areas.

The Calallen strike was made December 27 when L. A. Douglas' Charles McKinzie, northern Nueces County, cored oil and gas sand in the Frio zone at 5794-5810 feet. A drill stem test, made with the seat at 5806 feet, at the end of 7 minutes rocked up a pressure of 210 pounds through ⅜-inch top and bottom chokes. The tool was closed and the well flowed and sprayed 35 gravity crude for fully 20 minutes. It continued to unload until pipe had been broken down to the twenty-first stand. About 1850 feet of crude was recovered. This test then was cored 2½ feet deeper without recovery, but casing was set after electric formation tester was run.

May Involve Two Counties

The test is 330 feet from the west line of a 386-acre tract and 150 feet from the south line of the BS&F Survey 419. It is four miles east of Calallen and two miles northwest of the Saxet deep sand area, near the San Patricio County line, and it is expected that production will be found in both counties. The structure runs westward to a point near Calallen, as is indicated by the geophysical picture made for the Phillips Petroleum Corporation and by drilling operations of that concern.

See Map Page 62

The strike's importance is further increased by the fact that aside from vast holdings by the Phillips Petroleum Corporation, acreage is under lease to L. A. Douglas, Renwar Oil Corporation and the Maryland Corporation, Mills Bennett Production Corporation, Southern Minerals Corporation, Houston Oil Company of Texas, Conservative Oil Company, Sun Oil Company and others.

The sand corresponds closely to the 5800-foot pay in the Frio zone in the Saxet field. This section has proved unusually prolific, hence the new discovery is viewed as being of key importance.

This discovery is the second "hot" strike during the month in the southwestern section of the Gulf Coastal trend. East Premont, opened by the Magnolia Petroleum Company et al in southeastern Jim Wells County, has well in excess of 100 feet of sand with production coming from perforations at 6585-95 feet. Its discovery well is rated at fully 5000 barrels daily if allowed to flow open. A second well is being rushed to test the same sand zone. The structure is unusually large and it is believed that the field will cover a vast area. It, too, is situated in a position to receive a program by a number of companies.

Victoria Wildcat Produces

W. V. Bowles & Company's Robertson Estate 1, 5 miles southeast of Telferner, in Victoria County, was completed December 30, flowing 20 barrels per hour through ¼-inch choke. The oil is 27.4 gravity. Pressure was 150 pounds on tubing and 900 pounds on casing. Completion was in a sidetracked hole with casing set on top of sand found at 5100-14 feet. The original hole had been carried to 6138 feet. Location is in the north corner of Lot 30, T. C. Burham survey.

Company, Well and Location	Init. Prod. Bbls.	Depth
CASS COUNTY (Rodessa)—		
W. C. Feazel, Parker 1, G. Crowder sur	168	6090
MARION COUNTY (Rodessa)—		
Ark. La. Gas Co., Houston 2, A. D. S. Coy sur.....	554	6094
Gulf, J. Kemper 1, R. Bennington sur	936	6085
Turner et al, Scuddy 1, Jno. Hanks sur	1680	6025
PANOLA COUNTY—		
Magnolia, Hull 2, Thos. Applewhite sur	¶6½	5936

*Failures; †Junked; ¶Million cu. ft. gas.

Sarco Creek discovery to be completed soon

Beeville.—Final completion will be effected within the next several days in R. B. Swiger et al's Carrie Woods 1-B, discovery well of the Sarco Creek field in Goliad County. The well continues to show several barrels of oil and some drilling and commercial mud per hour while being swabbed through tubing. Production is coming from a Vicksburg sand, casing having been perforated at 5009-14 feet.

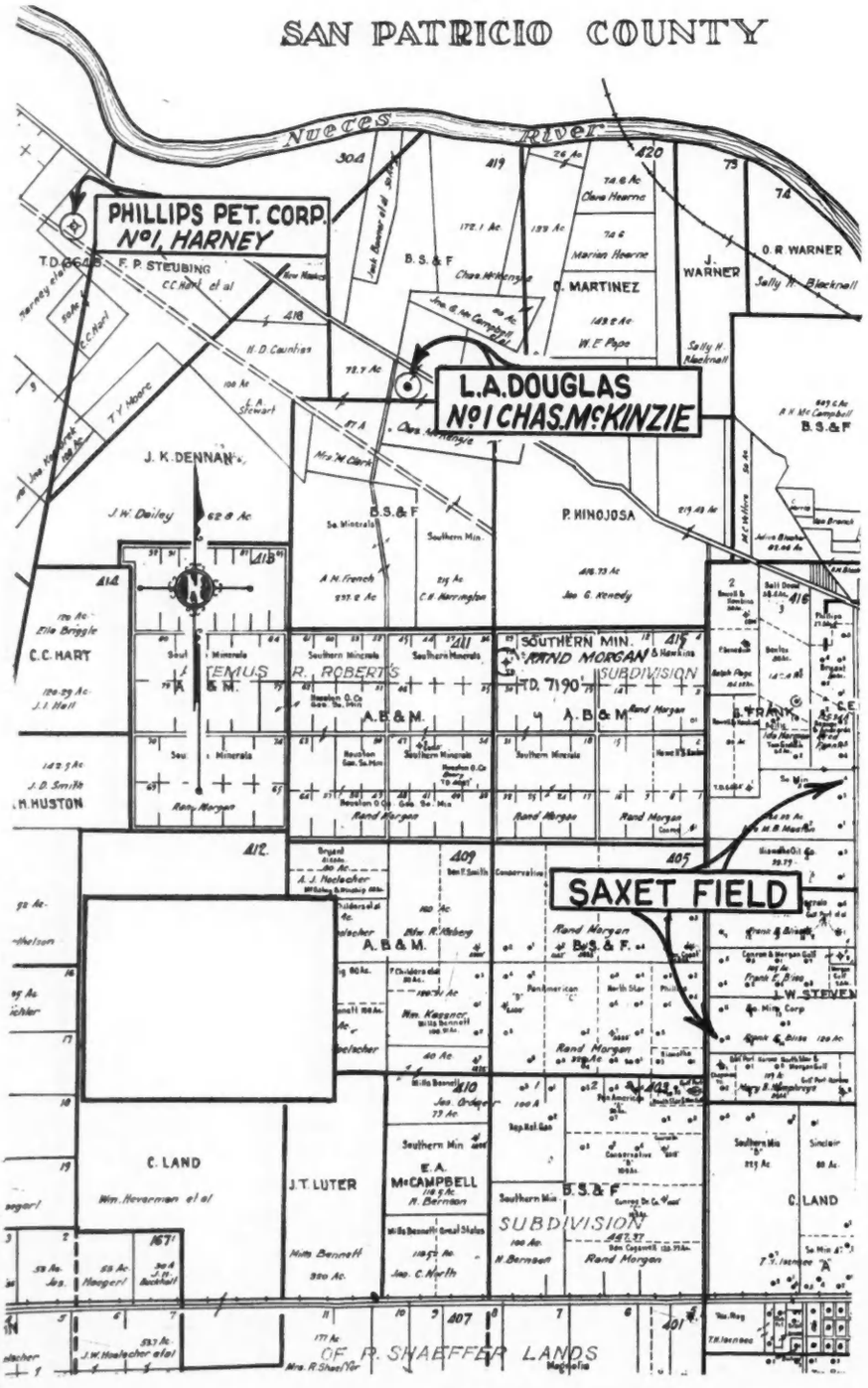
Multiple well development extended in North Sweden

Laredo.—Uncovering a sixth producing horizon for the North Sweden field, Navarro Oil Company's A-1 Mabel Rossi, SE Section 11, indicates that multiple well development will be extended to the southwest in this Duval County area. The well found a broken sand at 4510-50 feet in the Jackson horizon and on a drill stem test recovered 12 stands of oil, 1⅓ stands of salt water and 75 pounds working pressure in 15 minutes through ⅜-inch chokes, top and bottom. The tool slipped to 4520 feet during the test.

Despite the favorable showing, the well was carried ahead to 5331 feet and casing landed at 5316 feet for completion in the Pettus sand, an offset obligation. Other tests likely will be drilled immediately to test this level.

Over on the east side of the field, Benedum and Trees are waiting on orders in F. Vaello Puig 9, which drilled to 5557 feet after failing to get successful drill stem tests in the Pettus section topped at 5365 feet. Sand, sandy shale and shale were logged to below 5400 feet, below which level salt water was found. This well's showings, however, indicate that production will cover the entire structure in the Pettus zone.

North Sweden added its seventh producing horizon through completion of Frank J. Gravis' F. Vaello et al 1-A, ½-mile northeast of production. The well is producing several million cubic

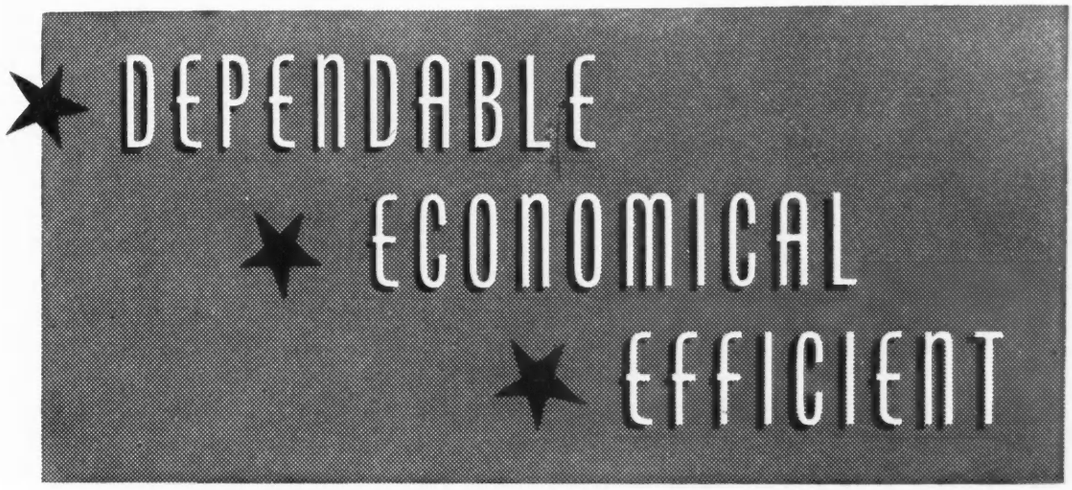


Map courtesy Porter Regenold, Corpus Christi.
Showing recent strikes in Nueces County.

SOUTH TEXAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
SAN ANTONIO DISTRICT		
BASTROP COUNTY—		
Marts & Beavan, Inc., Miears 1 (N. Dale)	*	2656
CALDWELL COUNTY—		
Finley, Tiller 14 (Luling)	160	2095
Ogden, Lackey 3 (Dale)	75	2556
Stewart, Carter & Ramos, Brown 3 (Buchanan)	*	2320
Wilson, Alexander 1, Dorothy Benton survey	*	2250
LAREDO DISTRICT		
DUVAL COUNTY—		
Circle, West 1-A (N. Sweden)	¶15	3915
Government Wells, Lundell 14 (Lundell)	154	1513
Gravis & Doran, Puig 9 (N. Sweden)	500	4804
Hiawatha, Parr 5 (N. Sweden)	225	4717
Humble, Murphy 1 (Labbe)	50	2798
Magnolia, Duval County Ranch 11 (Piedre Lumbre)	*	3137
JIM HOGG COUNTY—		
French, Garza 7, Survey No. 269	¶1	1054
McMULLEN COUNTY—		
Ezzell, Fee 2-A (Ezzell)	69	1506
Fee 10-A (Ezzell)	61	1486
Fee 11-A (Ezzell)	94	1470
Transcontinental, Lark 5-C (Jacob)	10	991
STARR COUNTY—		
Henshaw & Davis, Garcia 1-A, Porcion 89	*	3250
WEBB COUNTY—		
Killam, Garcia 25 (Killam)	285	1983
Kirkwood & Morgan, Juarez 9 (Oilton)	120	1945
Moore, Garcia-Villareal 1, (Oilton)	¶3 & 75	1947
CORPUS CHRISTI DISTRICT		
ARANSAS COUNTY—		
Atlantic, Porterfield 2-C (McCampbell) (pb/td 6862)	350	7234
GOLIAD COUNTY—		
Goliad, Cole 1-A, Range 4, Goliad Town tract	*	5687
Jane, Smith 7 (N. Pettus)	250	3724
HIDALGO COUNTY—		
Gulf States, Delta Orchards 2, La Mestena gr (perf 7880-88 ft)	¶10 & 140	7960
JACKSON COUNTY—		
Hargrove & Crosby, Hodges 1, La Ward Farms survey No. 7	*	6523
Harrison, Meyer 1, M. L. York sur	*	6013
JIM WELLS COUNTY—		
Walsh, Wade 3 (Sandia)	*	300
KENEDY COUNTY—		
Sal Vieja, Garcia 1, San Juan de Carricitos grant	*	9009
LIVE OAK COUNTY—		
Jones, West 1, Sam'l Barid survey	*	3105
Loma, Pfluger 1, John Turner sur.	*	1413
NUECES COUNTY—		
Houston, McGregor 13 (Saxet) (perf 6712-17 ft)	225	6915
Humble & Barnsdall, Webb 11 (Flour Bluff)	500	6650
Kepley, Donigan 10 (Saxet)	375	4584
Richardson, Cain & Sechrist 23 (Saxet)	975	4864
Seaboard, John Luby 3 (Luby)	475	5071
Southern Minerals, Walker 1, Richard King survey	*	6400
Stanolind, Spessard 1 (Luby)	250	4350
REFUGIO COUNTY—		
Hewitt & Dougherty, Lambert 65 (Tomoconnor-Greta)	1250	5922
Houston, Rooke 20 (Refugio)	450	4924
SAN PATRICIO COUNTY—		
Rutherford & Tide Water, George 1, Robt. Saddler & Juan Garcia surs.	*	7430
VICTORIA COUNTY—		
Magnolia, Lander 3 (Heyser)	175	5745

*Failures; †Junked; ¶Million cu. ft. gas.



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feet of gas and spraying some distillate after casing was perforated at 3965-72 feet, with 12 shots. The pressure is reported at 1600 pounds, equalized, flowing through 5/32-inch choke. It is a sand in the Cole group.

Howard Nessly's A. M. Bruni 3, Section 449, has opened a new Cole sand field 2 miles out of the southeast corner of Webb County and 8 miles south of Bruni, when it was completed as a 7,500,000 cubic foot gasser. The well showed working pressure of 400 pounds through ⅜-inch choke and closed-in pressure of 450 pounds. It logged oil and gas sand at 1790-1812 feet and shale and sand with salt water to 1850 feet. Casing was landed on bottom and perforated at 1804-8 feet, where the best oil show was encountered. The well, however, did not show any oil on production tests.

In Jim Hogg County, Darby Petroleum Corporation's Holbein 2-B, discovery well of oil production in Las Animas Cole sand gas field, was in final stages of completion. The well had flowed about 325 barrels of fluid into the pits and was standing full of oil after perforating casing at 1819-22 feet. It likely will make a good flowing well when placed on regular production.

L. H. Jones et al's F. O. Saenz 1, Block 6, Section 1005, is extending the Killam and Oilton fields, Webb County, merging the two into a single producing area. The test, drilled by O. W. Killam, is being finished as an oil producer in Mirando sand 1921-27 feet.

Hidalgo County wildcat to complete near 9000 feet

Mission.—South Texas' producing level was being materially lowered, this time to nearly 9000 feet, as Atlantic Refining Company prepared to complete American Rio Grande Land and Irrigation Company 1, Hidalgo County wildcat. The well, located in Section 175 and 2½ miles southwest of Weslaco, was drilled to 9105 feet and a string of 5½-inch casing landed on bottom. It previously had set 8505 feet of 7-inch pipe for protection.

The well logged a number of gas sands below 8000 feet and likely will result in a wet gasser or distillate producer. The subsurface condition is similar to that of the 7900-foot La Blanca district, about 25 miles northeast, also producing from Frio sands.

Kenedy County's first deep test, Sal Vieja Oil Corporation's Garcia Land and Cattle Company 1, was abandoned after drilling to 9009 feet.

TEXAS GULF COAST

Jefferson County discovery makes 15 for year.

* * *

Cedar Bayou well finally makes small producer.

Houston. — Before the year ended Shell Petroleum Corporation discovered a new field in Jefferson County, making the total of 15 discoveries in the Texas Gulf Coast during 1937. Another wildcat in Jefferson County indicated it would open a new field as the year ended.

In the McFaddin Ranch area, Jefferson County, Shell Petroleum Corporation completed McFaddin 1, December 27, flowing 15 barrels of fluid per hour, 15 percent wash water, from Miocene formation. After cleaning it made 25 barrels per hour of 34.2 gravity oil with no water, through ¼-inch choke. Tubing pressure was 925 pounds and casing pressure 875 pounds.

McFaddin 1, located in the S. A. Pace Survey, was drilled to 5929 feet in sand topped at 5913 feet. On the fourteenth drill-stem test the wildcat showed pipe line oil in commercial quantities. Nine and five eighths-inch casing was set at 5915 feet and after drilling cement plugs 2½-inch tubing was hung at 5889 feet. On the evening of December 27 the hole was washed for 5 hours when the pumps were shut off. It started flowing through 1-inch choke and then switched to a ¼-inch choke on the casing after one hour. The morning of December 28, the well was flowing 15 barrels per hour and on a shake out test it showed 15 percent washwater.

McFaddin is the second discovery of Shell Petroleum Corporation in Jefferson County, the first being at Nome. Shell Petroleum Corporation and Humble Oil & Refining Company control around 20,000 acres in this area.

The other Jefferson County field in immediate prospect is in the Cheek area, where Glenn H. McCarthy's Brussard Trust 1, C. Hillebrandt Survey, indicates production in the Frio at 7732 feet. Incidentally, if the indications are carried out, this will be the second field found by this operator in the county, he having opened the West Beaumont area.

Last week Brussard Trust 1 had cored to 7732 feet and had 75 feet of sand showing oil, gas and salt water between 7655 and 7730 feet. With the drill stem loaded with 1350 feet of fresh water, a 10-minute test through ¼-inch chokes showed no pressure, but after pulling out 18 stands of the drill pipe, the well headed, blowing water out of the pipe. Recovery was 360 feet of fresh water, 2610 feet of clean 34.8 gravity oil, and 400 to 450 feet of brackish water. Plans are to run electric formation test, set casing to bottom and perforate as the logging indicates.

Cedar Bayou Perseverance Wins

Perseverance in what had been accepted popularly as a forlorn hope finally resulted in opening of production at Cedar Bayou, in Chambers County, where Ingot Oil Company and Merit Oil Company completed Wright 1, C. Smith Survey. This well first gave indications of producing oil several weeks ago, but the volume of salt water associated with the oil was so great that possibilities were discounted. Last week, however, 8 holes through the casing between 6390 and 6392 feet resulted in a potential flow of 27 barrels of 39 gravity oil. Flow was through ¼-inch choke, with tubing pressure 750 and casing pressure 1050 pounds. The operators have announced location of two offsets.

Aldine, Harris County, received another setback when Texas Gulf Producing Company abandoned Rath 1, M. Sevey Survey, at 7698 feet. The test logged water sand at 7619 feet.

On the southeast side of Friendswood, Harris County, Humble Oil & Refining Company completed Cottinham 1, T. Choate Survey at 6090 feet, flowing 13 barrels of pipe line oil per hour through a ¼-inch choke.

The first failure for North Cheek field, Jefferson County, was reported when Magnolia Petroleum Company junked and abandoned Phelan 3 at 2914 feet after 18⅝-inch casing collapsed on bottom. Rig has ben skidded 20 feet west for a new hole.

Southeast of production at Seabreeze, Chambers County, Sun Oil Company

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completed Broussard Hebert 2, T. & N. O., Section 127, flowing 116 barrels of pipe line oil daily through ¼-inch choke with a tubing pressure of 2875 pounds and a casing pressure of 3000 pounds, from Frio formation at 8490 feet.

A new oil sand was found at South Cotton Lake, Chambers County, by Humble Oil & Refining Company's Lawrence 1, S. Barrow Survey. The well made 130 barrels daily through a ¼-inch choke from Marginulina at 6476 feet. Casing was perforated with 18 shots from 6467 to 6476 feet.

Six thousand feet southeast of production at Hastings, Brazoria County, Sam E. Wilson, Jr., announced location for Mills 1, in the northwest corner of the E. D. Mills 250-acre tract in I. & G. N. Section 23.

Gulf Coast A. P. I. to meet January 10

A program consisting of such widely diversified topics as to be of interest to everyone associated with the oil business, and to which all are invited, has been arranged for the next meeting of the Gulf Coast Chapter of the American Petroleum Institute, Division of Production. Three important features, all on different subjects, will be presented. One of these will be a discussion of the value of drilling mud as a wall builder and how to evaluate its properties. Another will be a talking movie showing engineering progress in the testing of sucker rods and the incorrect and correct method of handling them in the field. Still another will be a digest of current news and economic situation of the industry.

The meeting will be held at 7:30 the evening of January 10 in the Houston Chamber of Commerce Auditorium, which is the eighth floor of the building occupied by Levy Bros. clothing store. There will be no admittance charge.

The paper on "Drilling Wall Building Evaluation" will be delivered by Harold H. Farnham, Gulf Coast manager for Baroid Sales Company, and will be of wide interest to those engaged in drilling operations. Several others are to take part in the open discussion that will follow. The various types of mud and their quality as wall builders will be discussed and illustrated by Farnham. Of particular interest will be actual tests of drilling mud in recently developed portable filter test machines. These can be taken into the field for the purpose of evaluating mud wall building properties, and its ability to prevent the loss of water from the mud into the formations being drilled.

Those interested in producing problems alone will find their spot on the program with the presentation of the movie entitled "Progress in Sucker Rods." It not only shows the engineering and metallurgical tests to which modern rods are subjected before being sent to the field, but also modern field engineering, such as well studies and analyzing of pumping conditions. In addition the picture shows the correct and incorrect method of handling sucker rods in the field. The picture is both entertaining and educational, a comedy character having been included who shows by his antics what not to do to sucker rods in the field. The picture is to be presented by Charles Buchner of the S. M. Jones Company. An open discussion of sucker rod problems is planned after showing of the picture.

"Current News of the Industry" is to be the subject of Warren L. Baker, editor of THE OIL WEEKLY. His digest of the oil news should interest all oil men regardless of the particular type of work they perform, as it is to present a brief review of 1937, the outlook for 1938, as well as conditions existing at this time and important recent news events.

ARTHUR O. OLSON, president of the Olson Drilling Company which has several rigs active in the Illinois coal basin area, inaugurated a move which resulted in presentation of Christmas gift baskets to 65 needy families of Olney, Illinois. Coming from his home in Tulsa the Wednesday before Christmas, he obtained the cooperation of Loffland Brothers, Richard Robey Company, Carl Short, Inc., and Carl Egner, of Oilwell Supply Company, and $200 was subscribed for the purpose. The distribution was made on Christmas Eve under the direction of the Daily Mail and with the cooperation of local pastors.

TEXAS GULF COAST
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ESPERSON—		
General Crude, Esperson 37	68	2392
FRIENDSWOOD—		
Humble, Cottingham 1	312	6090
HARDIN—		
Shell, Cessna 2	575	7596
Woodley, McMurtry 5	600	7562
HASTINGS—		
Humble, Alexander 4	600	6125
Beers D-4	648	6070
C. O'Connor 2	624	5650
Shindler 5	624	6080
Stanolind, Bisbee 1	552	6080
Drake 16	469	5825
Hutchinson 6	505	5535
Wright 3	435	6100
LOCHRIDGE—		
Shell, Ramsey B-3	288	6368
NOME—		
Shell, Texas Public Service A-4	*	4775
Sun, Long 8	¶2½	6000
NORTH CHEEK—		
Magnolia, Phelan 3	*	2941
ORCHARD—		
Gulf, Moore 55	*	4500
SEABREEZE—		
Sun, Broussard Hebert 2	116	8490
SEGNO—		
H. H. Weinert, Hooks 1	33	5350
SILSBEE—		
Republic Prod. Co., Brooks 26	585	6963
SOUTH BAY CITY—		
Hamman Exploration Co., Slone 1	200	9200
SOUTH COTTON LAKE—		
Humble, Lawrence 1	130	6456
SPURGER—		
Republic Prod. Co., Hurd 6	612	7711
TOMBALL—		
Humble, Hillegeist 2	504	5617
WITHERS—		
Texas Co., Thompson 4	264	5551
CHAMBERS COUNTY—		
Merit and Ingot Oil Co., Wright 1, Cedar Bayou area, C. Smith sur.	27	6392
HARRIS COUNTY—		
Texas Gulf Prod. Co., Rath 1, Aldine area, M. Sevey sur	*	7698
JEFFERSON COUNTY—		
Shell, McFaddin 1, McFaddin Ranch prospect, S. A. Pace sur.	600	5923
LIBERTY COUNTY—		
Humble, Moore A-1, Devers area, B. Barrow sur (core test)	*	6500
POLK COUNTY—		
National Standard Oil Co., Carter Brothers 1, Leggett area, Womach	*	2960
Stewart Oil Co., Galloway 1, se Livingston, J. W. Ringold sur.	*	4250

*Failures; †Junked; ¶Million cu. ft. gas.

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SOUTH LOUISIANA

Second deepest well producing oil at Bateman Lake.

* * *

Two wildcats investigating interesting showings.

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SHREVEPORT, LOUISIANA

Lake Charles.—The second deepest producing well in the world was completed December 26 to open a new oil field for the Louisiana Gulf Coast and making the fourteenth oil field discovered during 1937.

The Texas Company after drilling to 11,879 feet in State Bateman Lake 1, Bateman Lake prospect, south of Morgan City, St. Mary Parish, was plugged back and casing was perforated with 12 shots from 10,900 to 10,905 feet. It came in flowing at the rate of 350 barrels of 33 gravity pipe line oil daily through a 3/16-inch choke with a tubing pressure of 850 pounds. The casing was sealed.

Bateman Lake is the second deep field to be discovered by The Texas Company in St. Mary Parish, the first field was Horseshoe Bayou which is producing pipe line oil from 10,870 feet. At one time Horseshoe Bayou was the deepest producing field in the world. A California well is producing from 11,302 feet. The two deep discoveries of The Texas Company will lead to deeper drilling in the area and also in other areas where production has already been established.

As the new year began there were two other interesting wildcats in South Louisiana which probably will open new oil fields. Amerada Petroleum Corporation and Louisiana Land & Exploration Company's South Coast Corporation 1, Raceland area, Lafouche Parish, was setting 7-inch casing at 9003 feet. After this casing is set, a string of 5½-inch will be run to 10,314 feet. The reason for the two settings is that while running the 7-inch it became stuck when the well tried to blow out. Tests will be made around 10,185 feet where a good body of sand was logged.

At Timbalier Bay, Lafourche Parish, Gulf Oil Corporation recovered more salt water on another drill-stem test last week. Casing was perforated with six holes from 6907 to 6968 feet and a 5-minute test was made with the packer set at 6953 feet. The test was made from 6953 to 6968 feet and showed 55 pounds pressure and 14 stands of fluid. The last four stands was salt water with a showing of oil. The perforations have been squeezed with cement and test will be made through perforations at another level.

North of production at Lake Long, Lafourche Parish, Fohs Oil Company and Pilgrim Exploration Company's State 3 was down to 10,333 feet in hard shale. The last showing logged in this extension well was at 10,083 feet. It will be drilled through the shale formation until sand is encountered, then coring will be commenced.

SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ROANOKE—		
Superior, Ferguson 1.....	*	9006
SOUTH JENNINGS—		
Loffland Brothers, Fentenot 1.....	50	8663
ACADIA PARISH—		
Humble, Sarver 1, South Crowley area, 35-10s-1e	*	10,272
ST. MARY PARISH—		
Texas Co., State 1, Bateman Lake area, 21-16s-12e, dr to 11,879 ft, pb, comp. 10,905 ft	350	10,905

*Failures; †Junked; ¶Million cu. ft. gas.

South Jennings Outpost

Loffland Brother's Fontenot 1, outpost test at South Jennings, Section 16-10s-3w, Jefferson Davis Parish, was completed last week after a series of tests were made. It made 50 barrels of 52 gravity distillate along with a large volume of gas daily after casing had been perforated from 8658 to 8663 feet. Flow was through 7/32-inch choke with a tubing pressure of 3100 pounds and a casing pressure of 3000 pounds.

A mile southeast of production at Roanoke, Jefferson Davis Parish, Superior Oil Producing Company abandoned Ferguson 1 at 9006 feet. An electrical logging device was run from 8416 to the bottom of the hole and did not show anything of commercial value.

Continental Oil Company has passed the 10,000-foot mark in Fay 1, southeast of South Roanoke, Jefferson Davis Parish. At the end of the week it was drilling below 10,160 feet in shale.

West of production at Bayou Des Allemands, St. Charles Parish, Amerada Petroleum Corporation and Louisiana Land & Exploration Company set 7-inch casing in St. Charles Land Company 1, at 7200 feet, and probably will run 5½-inch to 9263 feet. Several sands were logged below 7200 feet, as indicated by an electrical logging device. Seven-inch casing was set at 7200 feet to test sands up the hole and also to protect those showings.

Log Shallow Sand

At Charenton, St. Mary Parish, Pan American Production Company logged the shallow sand in Veeder Hunt 2 and was preparing to make a production test at the end of the week. Sand showing oil was cored from 1868 to 1902 feet. A production test will be made the coming week.

Six inches of sand showing oil was logged in Superior Oil Producing Company's State 1, offshore of Cameron Parish, last week from 7383 to 7403 feet. The balance of the core was shale. Also a core from 7464 to 7484 feet showed salt water. At the end of the week the wildcat was down to 7751 feet in shale.

Humble Oil & Refining Company abandoned Sarver 1, South Crowley area, Section 35-10s-1e, Acadia Parish, last week at 10,272 feet after sticking drill pipe at that depth. A gas sand was logged from 10,191 to 10,201 feet. Top of Marginulina was logged at 9632 feet.

Marion County well will increase drilling activity.

* * *

Lisbon completes year without recording a failure.

Shreveport.—Increased drilling activity will result from successful completion last week of H. B. Turner and associates' Scuddy 1, John Hanks Survey, Marion County, Texas, approximately midway between Jefferson and the Lodi nose of Rodessa, which flowed 77 barrels per hour through 39/64-inch tubing choke at 6025 feet.

This test, with elevation of 238 feet, logged top of anhydrite at 5248 feet, massive anhydrite from 5508 to 5753 feet, Hill section from 5872 to 5934 feet, topped the Henderson horizon at 5972 feet with the next 11 feet showing gas saturation, and topped the Gloyd at 5993 feet. The main Gloyd saturation was from 5994 to 6006 feet. Seven-inch casing was cemented at 5995 feet.

Arkansas-Louisiana Gas Company last week made two locations in the John Hanks Survey, both on the 102-acre R. C. Holland tract. Gulf Oil Corporation is already drilling in its location made in that survey immediately after Scuddy 1 showed saturation.

Marion County now has 42 producing wells.

The Hill sand upper horizon at Rodessa, was found productive of gas and distillate in the Miller County, Arkansas, extension of Rodessa last week when W. C. Feazel's Farmer 1, located 545 feet north and 1610 feet west SEc 13-20-28, which was dry in the Gloyd after showing gas, was perforated at the Hill and completed making 25 million feet of gas and 48 barrels of distillate daily. Total depth is 6098 feet. With elevation of 313 feet, this test logged top of Hill at 5865 feet, topped Gloyd at 6001 feet, logged porous lime showing gas from 6011 to 6020 feet and logged the Mitchell sand from 6051 to 6059 feet. Seven-inch casing was cemented at 6035 feet.

Lisbon Has Unusual Record

The Lisbon field, one year old December 25, with a record of no dry holes, added 3 good wells last week, 2 of which extended production to the south.

Sloan & Zook Company's H. W. Patton 5, C E½ NE SW 1-20n-5w, which logged 13 feet of porosity from 5303 to 5321 feet, was completed at 5371 feet, flowing 48 barrels per hour; elevation is 301 feet. This was two locations south of previous production. Still farther south, in C N½ SE SE J. C. Tippett Oil Company completed Aycock B-1 at 5360 feet, flowing 55 barrels per hour through ½-inch tubing choke with tubing pressure 250 pounds and casing pressure 50 pounds. Elevation is 334 feet.

In the northeast part of the field A. O. Olsen completed T. F. Patton Estate A-6, C N½ NE SW 30-21n-4w, at 5137 feet, flowing 50 barrels per hour through ½-inch tubing choke with tubing pressure 275 pounds and packer on casing. Porosity was logged from 5132 to 5137 feet; elevation is 277 feet.

Fifteen tests were drilling in Lisbon last week with 3 others rigging, two derricks and 5 other active locations.

E. T. Oakes, H. D. Easton and associates' Griggs 1, C SW 36-18n-1w, Lincoln Parish, showed favorably on electrical log when 9 feet of porous oolitic lime was tested between 5932 and 5941 feet. It is expected that casing will be perforated at that point during the week. The show is in Basal Glen Rose, and bottom of hole is at 6260 feet in Travis Peak shale, while 5½-inch casing is set at 6121 feet.

Some leasing activity was under way last week in North Louisiana despite the holiday season. F. F. Meadows was actively leasing in township 23 north, range 12 west, Bossier Parish, near the old shallow Cartersville field.

Continental Oil Company was assembling an 8000-acre block in Franklin Parish, southeast of Winnsboro, where it recently had a shooting unit.

Superior Oil Company and Burton Hartley were leasing in Rapides Parish, in township 1 south, range 4 west.

In Union County some leasing continued. Standard Oil Company is reported negotiating with C. H. Murphy for a block he recently secured around Section 16-22n-2e, Union Parish.

NORTH LOUISIANA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO PARISH (Rodessa)—		
Gulf, Allison 1, 3-23n-16w	120	6024
Shell, U. S. Government A-1, 3-23n-16w	125	6016
CADDO PARISH (Blanchard)—		
Olsen et al, Sharp 1, 15-18n-16w	¶14½	5624

*Failures; †Junked; ¶Million cu. ft. gas.

Start survey of new Lisbon line

Shreveport.—Surveying of a right-of-way for a proposed 28-mile six-inch line for Barbour and Wood from the Lisbon field, Claiborne Parish, to a point near Minden, Webster Parish, on the Louisiana and Arkansas railroad, was begun last week. The survey will be completed within a fortnight. This will be the field's third pipe line.

Shreveport.—Twenty drilling permits were authorized last week by the minerals division, Louisiana Conservation Commission of which 12 were for North Louisiana divided among the following parishes: Caddo, 3; Caldwell, 1; Claiborne, 1; DeSoto, 1; Grant, 1; LaSalle, 1; Sabine, 1; Tensas, 1; and Webster, 2. The eight in south Louisiana were divided among the following parishes: Acadia, 1; Calcasieu, 1; Cameron, 3; and St. Martin, 3.

Seventh Schuler well flows 144 barrels hour

El Dorado, Ark.—The lower Marine horizon below 7500 feet in the Schuler field, Union County, added its seventh producer last week when Lion Oil Refining Company's Morgan B-3, NE NW SE 18-18-17, after perforating 7-inch casing set on bottom at 7670 feet, from 7540 to 7575 feet, came in flowing 144 barrels per hour through open tubing. Elevation is 248 feet and the lower Marine (Jones) sand was logged from 7530 to 7590 feet.

Also last week Marine Oil Company's M. Justiss 2, SWc Lot 7, NW 18-18-17, flowed 1223 barrels in 24 hours through 15/64-inch tubing choke after perforating from 7520 to 7570 feet. Total depth is 7614 feet and 7-inch casing was cemented 4 feet above bottom. Later the well flowed 1566 barrels in 24 hours through ¼-inch tubing choke.

Lion Oil Refining Company's Marine Oil Company 1, NEc SE SW 17-18-17, flowed 2430 barrels in 24 hours through 1-inch choke after perforating from 7528 to 7564 feet. Jones sand was logged from 7528 to 7589 feet. Later through open tubing this well flowed 3953 barrels in 24 hours.

Lion Oil Refining Company's Morgan C-1, NE SE SE 18-18-17, was coring at 7664 feet and Phillips Petroleum Company's Jennings 1, NWc SW NE 18-18-17, was coring at 7664 feet.

Lion Oil Refining Company's M. Justiss A-1, NEc NW NE 19-18-17, in which 7-inch casing was cemented on bottom at 7647 feet, was perforating for testing at 7530 to 7565 feet.

With a 40-acre spacing rule recommended by Standard Oil Company of Louisiana, discoverer of the Buckner field, Columbia County, accepted by the Arkansas Board of Conservation, 3 new locations were made in that district last

ARKANSAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CLARK COUNTY—		
M. M. Martin, C. L. Cabe 1, 14-10-20	*	2800
UNION COUNTY (Shuler)—		
Lion, Marine 1, 17-18-17	2430	7645
Marine, Justiss 2, 18-18-17	1223	7614
MILLER COUNTY (Rodessa)—		
Roger Lacy, Sartor 1, 15-20-28	1440	6040

*Failures; †Junked; ¶Million cu. ft. gas.

week, two of them by Standard Oil Company.

The company announced location for D. E. Thomas 1, NW SE 8-16-22, ½-mile east and slightly north of McKean 1, C SW SW 8-16-22, the discovery well, and for Bodcaw Lumber Company 1, SW NW 17-16-22, ¾-mile south of the discovery well, both in Columbia County. Across the line in LaFayette County, Lyons and Neely made location for Lillian Taubel 1, SE NW 18-16-22. Clarence H. Taubel, an associate of Lyons and Neely recently acquired a large spread of leases, including the new location.

A. H. Tarver of Shreveport will drill the Permian lime test for Benedum & Trees Oil Company on the latter's block centering around Section 16-14-19, Ouachita County. Tarver recently made location for the test in that section. Permit for Benedum & Trees Oil Company to drill in Section 4-14-19, was issued in error and was for a test in the Troy field, Nevada County, in Section 4-14-20.

Root Petroleum Company is assembling a 6000-acre block around Section 30-18-14, Union County, 15 miles southeast of El Dorado where there is a reported Nacatosh high and where a good seismic picture was obtained.

Atlantic Refining Company has taken two tracts southeast of Schuler production, NW NE 22-18-17, and NE SE 23-18-17, Union County. Columbia Carbon Company has secured a geophysical option on a large block in Desha County, in township 9 south, range 3 west.

Only one test to the Permian lime will be drilled at present on Benedum & Trees Oil Company's 5000-acre block around Section 16-14-19, Ouachita County. The company has assigned acreage for this test to A. H. Tarver of Shreveport who is rigging in Section 16-14-19.

Two drilling permits, both for the Schuler field, Union County, were authorized last week by the Arkansas Board of Conservation, as follows: Lion Oil Refining Company, Edna Morgan B-5, 330 feet from south line and 330 feet from east line of W½ SE 18-18-17, and Marine Oil Company 2, 330 feet from south line and 330 feet from west line, E¼ SE 17-18-17.

Correction of location was announced for Benedum & Trees Oil Company's Mitchell 1, formerly carried as in Ouachita County but now listed as 330 feet north and west SEc SW SE 4-14-20, Nevada County.

SOUTHEASTERN STATES

Plan further testing on Hinds County salt dome.

* * *

Mississippi supervisor gives data on two year work.

Jackson, Miss.—Southern Natural Gas Company which recently abandoned at 4344 feet its Angelo Williams 1, Section 35-6n-1w, Hinds County wildcat that found a salt dome, is expected to announce location for a second test on the dome early in the new year. A consulting geologist from Shreveport was called to Birmingham, Alabama, for a conference and to study the log and cuttings of the abandoned test prior to making location for a second hole.

Discovery of this second salt dome in Mississippi during 1937 led to the belief that a vast salt basin exists in southern Mississippi. Sun Oil Company and associates found a dome last January in Section 28-4n-15w, Lamar County.

Two other domes are reported to have been indicated in Hinds County by geophysical units. Southern Natural Gas Company has over 100,000 acres under lease in this general area, part extending west into Warren County.

Gulf Oil Corporation which has led in south Mississippi geophysical and leasing activity throughout 1937, having taken an estimated 20 or more blocks, is now leasing in Claiborne County. On January 1 this company was reported moving headquarters for several gravimeter units to Jackson.

Continental Oil Company is reported acquiring royalties under parts of a block held by Gulf Oil Corporation in Lawrence County.

The California Company has a reflection seismograph unit working in the west part of Pike County and a gravimeter unit in south Lincoln County.

Kirby Petroleum Company and Adams Oil & Royalty Company are expected to start a test early in 1938 on a 7000-acre block they recently acquired in township 22 north, ranges 3 and 4 east, Grenada County, north Mississippi.

A. B. Taylor and associates have abandoned Foster Creek Oil Corporation 1, NW NW 32-4n-2w, Wilkinson County, southwest Mississippi, as a dry hole at 3824 feet; elevation was 221 feet. An electrical tester was run before abandonment which showed nothing. Not even a gas show it was thought occurred around 3670 feet.

On July 1 there were 96 producing wells in the Jackson gas field, according to the biennial report from July 1, 1935, to June 30, 1937, compiled by the Mississippi State Oil and Gas Board of which Henry N. Toler is state oil and gas supervisor, for submission to the legislature which meets January 4.

The report pointed out that oil and gas development in the state for the biennium was less than during the preceding two years but that wildcat activity increased and that on July 1, 1937, drilling, leasing and exploration work were at an all-time peak.

Reviewing the Amory gas field, Monroe County, discovered in 1926, the report showed that only one well was still producing and that the average production from it was only about three million cubic feet per month. Total gas production in the field to July 1, 1937, was 1,448,166,000 cubic feet of which 92,430,000 cubic feet were withdrawn in the immediately preceding two-year period.

During the biennium ending last July 1 only 13 tests were drilled in the Jackson gas field of which 5 were gas producers and 8 were dry holes. Total amount of gas production from time of discovery to last June 26 was 65,396,645,000 cubic feet, of which 25,493,627,000 cubic feet were produced in the last 2-year period. A 2½ percent production tax on the value of the gas at the well is levied by the state.

The State Oil and Gas Board estimated the ultimate withdrawal of the field at 110 to 115 billion cubic feet, and estimated the life of the field at about 4 more years at present rate of withdrawal.

The report stated that three southeast edge wells in the Jackson field have been producing some heavy oil along with large quantities of salt water the aggregate oil production of the 3 wells during the biennium being 2425 barrels or a total oil yield since their completion of 15,000 barrels.

The report recited that during the biennium ending last June 30 that 29 drilling permits were issued for wild-

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cat tests of which 20 were abandoned during that time, 5 of them going to 5000 feet or deeper.

"Sun Oil Company's Scanlon and Semmes well No. 1 in Section 28-4n-15w, Lamar County, which was abandoned at 4024 feet January 12, 1937, was the most interesting well drilled," the report stated.

"This well encountered rock salt at 2522 feet, thus proving for the first time the existence of a salt dome in Mississippi, and in a great measure reviving and stimulating the search for oil and additional gas fields in the state."

Mobile Bay exploration grant extended by state

Mobile, Ala.—Fred E. West and Westbrook, Thompson and Stewart have secured from the state of Alabama an indefinite extension for the starting of geophysical exploration work on state land in and around Mobile Bay. The original contract called for such work to begin within six months from last October 18. A federal objection to the state's granting this exploration lease has been withdrawn.

William G. Blanchard, who is shut down at 200 feet in Lucy Cotton 1, Section 35-3s-11e, Suwanee County, Florida, while curing title and filling gaps in his block, has announced that he has contracted with Helmerich & Payne, drilling contractors, to move in heavy-duty rotary equipment to deepen this test and following its completion these contractors will drill several additional tests for Blanchard on large holdings he has in that state.

J. C. Prine is arranging to purchase a string of 8-inch casing to cement at 1100 feet in King 2, Section 4-1n-4w, Mobile County, Alabama.

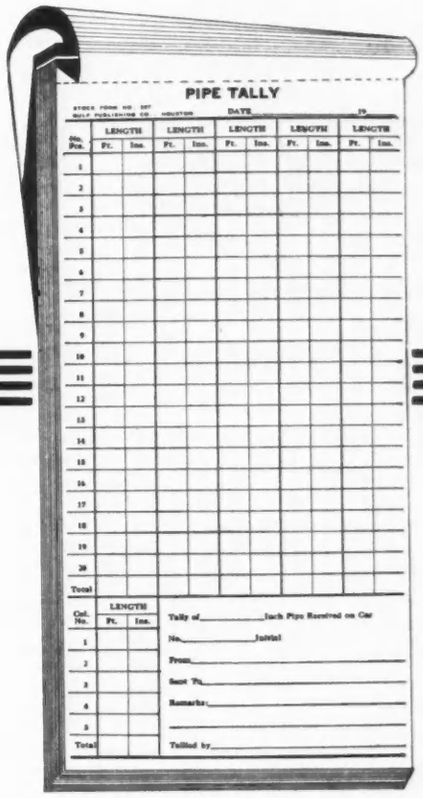
Florida Oil Discovery Company's Sholtz 2, SW SW NE 9-15s-13e, Levy County, Florida, is shut down at 2275 feet in lime repairing draw works. Operators reported a showing of oil and gas at 1893-95 feet in coarse-grained shaley lime. A trace of oil and gas was also reported at 1512-20 feet.

Gulf Oil Corporation is still making a geophysical exploration of approximately 1,000,000 acres of Everglades land in and around Collier County, Florida, having a gravimeter and seismograph units there. A marsh buggy is being used. A gear was broken recently on the marsh buggy and the men started afoot to civilization. The company learning the men were missing chartered a blimp at Miami and it picked up the party 20 miles east of the village of Immokalee. Food and tobacco were furnished the men and the blimp took the marsh buggy driver to Miami while the rescue party in home-made hunting tractors took the other three members of the party to Immokalee.

SOUTHEASTERN STATES
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
HINDS COUNTY—		
Southern Nat. Gas Co., Williams 1, 35-6n-1w	*	4346
WILKINSON COUNTY—		
A. B. Taylor et al, Foster Creek Oil Corp. 1, 32-4n-2w	*	3824

*Failures; †Junked; ¶Million cu. ft. gas.



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ROCKY MOUNTAIN FIELDS

Lance Creek outposts at critical stage.

* * *

Colorado well coring for deeper production.

Casper, Wyo.—Two Wyoming wildcats failed this week while The Texas Company and The California Company's wildcat strike on Wilson Creek cored for the Sundance sand. Several outpost tests in the Lance Creek field, Wyoming, were at critical stages.

On the Foote Creek structure, Carbon County, Ohio Oil Company plugged and abandoned Griffin 2, CSW SE SW 2-21n-77w, which had water in the Tensleep sand at 3536 feet. Test had the top of the Pennsylvanian formation at 3497 feet. The Foote Creek structure is located in the Laramie Basin.

Mountain Fuel Supply Company's John W. Hay, Jr., NE SE 2-19n-110w, Black Fork anticline, Sweetwater County, southwestern Wyoming, abandoned at 5330 feet with hole bottomed at 200 feet in the Laramie formation. The company's J. R. Ellis 1, CSE SE SE 8-18n-109w, which recently started as a validating hole on a Black Fork anticline permit, spudded to 100 feet and has been shut down indefinitely.

Colorado Well Coring

Joint test of The Texas Company and The California Company, Freeman-Government 1, CSE NW 35-3n-94w, Wilson Creek structure, Rio Blanco County, northern Colorado, is coring for the Sundance at 6731 feet. The past week the well flowed at the rate of 1480 barrels of 43 degree gravity oil with drill stem open 45 minutes. Tester was seated at 6664 feet with total depth at 6704 feet. Gravity of the oil from the Morrison formation was 43 gravity and it is a light green oil. The Wilson Creek structure embraces 15,000 acres.

Lance Creek Outposts

Four outpost wells, two in the Minnelusa sand and two in the basal Sundance were preparing to test this week in the Lance Creek field, Niobrara County, eastern Wyoming. On the west side of the field, J. M. Huber Corporation's Joss 3, NE NE SW 5-35n-65w, logged the Sundance nearly 100 feet higher than expected and is testing saturation from 3943 to 3978 feet.

Mackinnie Oil & Drilling Company's Thompson 2, NE NE NW 7-35n-65w, a quarter mile south and west of production, is waiting on cement to set around the 7-inch casing at 5269 feet. This well cored saturation in the middle Minnelusa sand to 5278 feet where hole bottoms. It will be drilled deeper into the sand. Following completion of Thompson 2, Mackinnie will move rotary equipment to Thompson 3, NWc NE 7-35n-65w, an east offset to Thompson 2.

On the southeast side of the field, Ohio Oil Company's Cash 5 OPC 2, CNW NE 4-35n-65w, is drilling plug preparatory to testing the Sundance formation with the 8⅝-inch casing set at 4077 feet. Hole bottoms at 4109 feet and excellent saturation was cored. The Sundance was topped at 4091 feet. Ohio Oil Company's Converse Sheep 8, CNW SE SW 32-36n-65w, is drilling at 3257 feet.

A quarter mile west of Mackinnie outpost test, Thompson 2, C. L. Price is started on an important test of the Minnelusa. His test is Lamb 1, NE NW NW 7-35n-65w, and is drilling at 301 feet after setting the 12½-inch surface casing at 283 feet.

Northeast offset to the Minnelusa discovery well, Continental Oil Company's Apex 1 Account 3, SE NE 34-36n-65w, has cleaned up fishing job and is preparing to run casing to test the Minnelusa sand with total depth at 5479 feet. Continental Oil Company's Schuricht 6-B, SW SW SE 6-35n-65w, on the west side of the field, is waiting on cement to set around the 7-inch casing at 5151 feet with total depth at 5179 feet in the Minnelusa sand.

Continental Oil Company's Leach 1, SW NE NE 29-36n-64w, test which failed in the deep sands underlying the East Lance Creek unit block, is shut down at 3900 feet with an estimated 5 to 6 million cubic feet of gas daily. It drilled 6434 feet to the Madison lime and failed to develop showings in either the Basal Sundance or the Minnelusa sands.

MOUNTAIN STATES
Completions

MONTANA

Company, Well and Location	Init. Prod. Bbls.	Depth
TOOLE COUNTY (Kevin-Sunburst Field)—		
Big West Oil Co., McDonald 7, nw ne ne 19-35n-2w	5	1541
Coeur D'Alene Oil Trust's Anderson 2, ne sw sw 18-35n-1w	100	1757

WYOMING

ALBANY COUNTY (Quealy Field)—		
California Co., Holst-Wolf 2, cne nw nw 13-17n-76w	*	3650

*Failures; †Junked; ¶Million cu. ft. gas.

In the Salt Creek field, Stanolind Oil & Gas Company brought another well to the Tensleep sand and is testing the well by stages. The company's Wyoming Associated Oil Company 29-TP, CSW SW 26-40n-79w, is bottomed at 4100 feet in the Tensleep sand with the 7-inch production casing set at 4099 feet. Packer was set at the first 10-foot stage and casing perforated with gun. The well will be tested at levels to ascertain water stratas in the Tensleep. The company has two other wells testing by this method and is drilling three others which will complete selectively to obtain geological information to set an accurate method of completing wells in its deep drilling campaign to develop the Tensleep sand.

Production in Sinclair-Wyoming Oil Company's Wertz 11-A, SE NW NW 7-26n-89w, second deep well drilled to the Tensleep in the Wertz field, Carbon County, has increased in its flow from the initial production of 285 barrels to 410 barrels daily. It has the Tensleep at 5974 feet and total depth at 5977 feet. The company's third well to the Tensleep at Wertz, Wertz 12-B, SWc SE NW NW 7-26n-89w, is waiting on cement to set around the 13⅜-inch casing at 520 feet.

A 10,000,000 cubic foot daily gas flow was reported developed in New Era Fuel Company's Brown-Government 1, NWc SW NW 25-32n-69w, in the West Shawnee Creek area, Converse County, Wyoming. The well had the flow with 2 feet of sand drilled and total depth at 525 feet.

Wyoming-Southern Oil Company's Robert Salisbury 3-A, NEc SE 27-32n-69w, was plugged and abandoned after failure to get water shut off just above the first oil showing at 527 feet.

Despite cold weather and an oversupply of crude oil in northern Montana, three new operations got underway this week in the Kevin-Sunburst field, Toole County. New wells are E. O. Phelps' Government 1, CNE SW 25-36n-3w, spudding at 90 feet; Superior Petroleum Corporation's Government 7, NE NW NW 12-35n-3w, rigging up, and Henry Vander Pas' Thompson 1, SW NW NW 33-35n-3w, drilling at 600 feet.

Gain in California gasoline use shown

Total of 140,281,207 gallons of motor fuel was distributed during November in California upon which the state tax of 3 cents a gallon was paid. This is a gain of 1.9 percent over the same month of the previous year and slightly under the total for October, this year.

For the first 11 months of 1937, a total of $47,177,097 has been received by the state from its 3 cents gasoline tax and it is indicated that slightly in excess of $50,000,000 will be collected by California in 1937 through its gasoline tax, the largest amount in the history of the state.

Of the total gallonage upon which taxes were paid in the state last month the Standard Oil Company paid taxes on 24,557,283 gallons. Shell Oil Company was second with 16,274,170 gallons. Richfield Oil Company was third with 13,408,550 gallons, while Union Oil Company was fourth with 13,331,954 gallons.

NEW MEXICO

Lea County wildcat work increasing.

Hobbs.—Active wildcats in eastern Lea County and adjacent to the Texas border increased to three the past week when Continental Oil Company et al started operations on H. E. Marsh 1, C NE SE 31-20s-39e. It is 2½ miles north of a non-commercial oil well completed last year by Brown, Reynolds et al on the Parcell permit. The new test is opposite the northwest corner of Andrews County, Texas. Eastland Oil Company et al's Waldrop-Shell 1, C SE SE 1-20s-38e, within 2 miles of the border, was drilling at 4755 feet. W. L. Todd, Trustee's Leonard 1, C SE NW 29-26s-38e, extreme southeast corner of Lea County, is preparing to explore a 2560-acre permit.

Lea County accounted for 5 locations the past week, and added 7 producers. In addition to the wildcat, Continental Oil Company et al made locations for Elliott 1-B-9, C SW NW 9-22s-37e, Penrose field, and Sanderson 7-A-14, NE SW NE 14-20s-36e, Monument area. Gulf Oil Corporation's State-Janda 2-E, NW NE NE 21-23s-36e, offsets a new east outpost for the Lynn pool. Parker Drilling Company has started operations on Erwin 1, C W½ SW SW 34-24s-37e, Mattix field, on a farmout by The Texas Company.

Production limits of the Vacuum pool, Lea County's next active drilling center, were extended eastward when Skelly Oil Company's State 1-J, C NE NW 31-37s-35e, encountered first oil show at 4330-55 feet and at 4540 feet flowed 15 barrels hourly natural. Small amount of bs&w is showing with the oil production. It is 1½ miles northeast of the southernmost producer.

Cities Service Oil Company scored two large producers in the southwest portion of the Eunice field, including an important outpost. This company's Closson 1-A, C NE NE 18-22s-36e, 1 mile south and west of production, flowed 300 barrels natural in 2 hours from lime at 3740-3814 feet, and rig has been skidded to drill a south offset. Closson 8, C W½ NE NE 6-22s-36e, averaged 135 per hour natural on 2-hour test from lime at 3794-3845 feet.

NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
EDDY COUNTY—		
Grayburg Oil Co., Burch 9, se nw nw 19-17s-30e	25	3158
Nash & Windfohr, Jackson 6-A, c ne se 13-17s-30e	480	3525
LEA COUNTY (Cooper)—		
Skelly, W. H. Combest 1, nw nw se 27-23s-36e	*	3950
LEA COUNTY (Eunice)—		
Continental, State 2-E, c ne se 17-22s-36e	250	3858
Repollo, State 1-B-157, ne ne nw 7-22s-36e	980	3830
LEA COUNTY (Monument)—		
Continental, State 1-A-7, c ne se 7-19s-37e	76	4046
State 6-A-17, c nw ne 17-19s-37e	350	4026
Skelly, State-Mon 2, c ne se 13-19s-36e	84	4062
LEA COUNTY (Skelly)—		
Skelly, Sims 2, c se ne 10-23s-37e	350	3650

*Failures; †Junked; ¶Million cu. ft. gas.

MICHIGAN FIELDS

Bentley pool extended three miles.

* * *

Deep test projected in Montcalm County.

Mt. Pleasant, Mich.—Despite holiday and year-end shut downs and slowing up of operations due to weather conditions, Michigan recorded 22 completions this week for the best seven-day period in two months.

Most important of the 22 completions was McClanahan Oil Company's Connely 1, NW NW SW 35-17n-2e, Bentley township, Gladwin County, which initialed, net, 108 barrels after a 2000-gallon acid treatment in Dundee limestone. It is expected to extend the new Bentley pool for a minimum of three miles. Connely 1 is producing from Dundee, topped at 3388 and bottomed out at 3527 feet. It swabbed 16 barrels daily before acid.

Seven failures were recorded in the year-end clean-up of completions including Sun Oil Company's State B-1, C N½ NE SE 5-16n-1w, Edenville township, Midland County. This test showed 400 feet of oil in 5-3/16-inch casing from Dundee lime but failed to acidize into a commercial producer. Despite failure of this test, which is

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in wildcat territory on the same trend as the Beaverton and South Beaverton oil pools, Gladwin County, considerable new exploration is certain to follow. Chapman Oil Company and Associated Petroleum Company have started a deep test two miles farther southeast.

Rig is being moved in this week by Socony-Vacuum Oil Company for a deep test in Section 22-12n-6w, Home township, Montcalm County. Operators plan to drill both the Dundee and Monroe lime horizons and possibly the Sylvania, which would be at about 4500 feet. The test is three miles south of the restricted Edmore oil field, which produces from the shallower Traverse limestone at about 3000 feet.

Daily Crude Oil Company's State 1, Section 29-15n-2e, Midland County, showed 500 feet of fluid 215 feet in Dundee lime after standing idle for three days, waiting for final orders to abandon. Operators, after taking samples of oil and testing bottom hole lime samples, this week decided to run 5-inch casing and test the show. Top of Dundee was recorded at 3656 feet with total depth now at 3871 feet.

MICHIGAN

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ALLEGAN COUNTY—		
Mich. Devonian, Goodman A-2, ne se sw 16-4n-13w	100	1604
Lima Oil, Nahar 1, sw se nw 22-4n-13w	*	1602
Spreger Bros., McCarn 1, nw ne nw 19-1n-13w	*	1550
BAY COUNTY—		
Fortney Oil Co., Smart 1, nw nw sw 7-16n-5e	*	3111
Charles Weller, Dewyer 1, nw nw sw 20-16n-3e	3	3393
GLADWIN COUNTY—		
McClanahan, Connley 1, nw nw sw 35-17n-2e	108	3527
Sun, Card 4, nw se nw 10-18n-1w	750	3663
Strohkirch 3, nw ne nw 10-18n-1w	450	3668
Strohkirch 4, sw ne nw 10-18n-1w	300	3668
Strohkirch 5, se nw nw 10-18n-1w	550	3668
C. W. Teater, Domokos 6, se nw nw 11-18n-1w	200	3630
S. & S. Oil Co, Fitzwater 1, sw se ne 26-18n-1w	150	3594
Rex Oil Co., Arkwright 2, se nw ne 35-18n-1w	140	3577
Petroleum Investor, Knight 2, sw nw sw 16-18n-1e	90	3617
GRATIOT COUNTY—		
Chartiers Oil Co., Bolyard 1, sw sw ne 12-9n-14w	*	3183
ISABELLA COUNTY—		
Pure, Cornell 1, se ne nw 33-15n-6w	417	3683
Latham 6, ne nw se 33-15n-6w	290	3695
MIDLAND COUNTY—		
Sun, State B1, c n½ se ne 5-16n-1w	*	4034
Pure, Bond A-12, c s½ nw sw 7-13n-1w	65	3432
Frank Sumner, Raymer 1, sw sw nw 18-13n-1w	26	3445
MONTCALM COUNTY—		
R. M. Burch, Houghton 1, se sw sw 6-12n-6w	*	1311
OGEMAW COUNTY—		
Weber Oil Co., Nelson 1, sw nw ne 36-22n-2e	40	2639

*Failures; †Junked; ¶Million cu. ft. gas.

STUART H. SIMPSON, 91, one of the pioneers in Pennsylvania oil development, died December 28 in Oil City after a short illness. Born in Pittsburgh, he came to Oil City in 1877, 18 years after the Drake discovery was drilled. He first engaged in development around Oil City, and as interest spread to West Virginia and other sections, he broadened the scope of his activities. He was a member of the old Oil City Oil Exchange when that organization was the nation's principal oil marketing medium.

El Segundo well has unexpected large gas flow.

* * *

Test on Middle Kettleman Hills Dome disappointing.

Los Angeles.—One of the most spectacular blow-outs and fires in any oil field in California since the early days of Santa Fe Springs, was witnessed hecently at El Segundo when Richfield Oil Corporation's Santa Fe B-1, total depth 7539 feet, blew out on December 21, and 24 hours later caught fire. The well cratered and died of its own accord at 4:00 p.m. on Christmas day.

This well was within 300 feet of the oil sand and it is thought to have hit a gas pocket. Authorities estimated it was making between 50,000,000 and 60,000,000 cubic feet of gas, shooting mud, gas and a little oil 200 feet into the air. The derrick and complete equipment fell into the crater, which is 50 feet across, and the bottom cannot be seen from the top. It is estimated that the total loss will run close to $250,000.

There are 18 wells now actively drilling in the El Segundo field and several new locations have been announced during the last two weeks, but it is likely that development will be slowed down to some extent within the next month or so, due to the action of certain recent completions. One illustration is Apex Petroleum Company's Elsie Community 1, which was completed for 1350 and soon dropped to 800 barrels oil, and Ruchti Petroleum Company's No. 4, which was completed November 27 for 475 barrels, has quit producing and will be placed on the pump. Two or three other recent completions have been disappointing.

Barnsdall Oil Company is expected to complete a second producer in the new Newhall field in Los Angeles County early in the year. Rancho San Francisco 2, located 340 feet north and 1820 feet east from SEc Section 26-4n-17w, picked up oil sand streaks at 5944 feet and found the solid oil sands at 6043 feet. The hole is now coring in oil sand at about 6200 feet.

The second Barnsdall Oil Company well picked up the oil sand at 115 feet higher than in the discovery well, which was completed April 22, 1937, flowing 200 barrels of 36 gravity oil through 1-inch choke. Present production is 145 barrels of 35.2 gravity oil and running about 110,000 cubic feet of gas.

Early in the year Barnsdall Oil Company had blocked up several thousand acres of leases in the general vicinity of the present field but since that time has reduced its leases to about 4000 acres, which it is thought will embrace practically all of the area that is expected to be proved.

Union Oil Company's Bell 100, deep test at Santa Fe Springs, with bottom at 11,314 feet, is still being swabbed. After being allowed to stand idle for about three hours the fluid rise was estimated to be equivalent to a production of about 100 barrels a day. The oil is 28 gravity and clean.

Temblor Oil Company's important test in Middle dome of Kettleman Hills with bottom at 9138 feet, is showing little encouragement after two days of swabbing. It is indicated the well is wet and it is thought the 4¾-inch blank liner will have to be recemented. Three-inch liner, 188 feet perforated, was landed on bottom, being run on the inside of 1000 feet of 4¾-inch.

Practically all of the Middle dome is under lease, but operators are waiting on the Temblor test before starting new activity, and judging from cores and formation tests, the hole is expected to be a producer, if mechanical troubles can be solved.

In the Wasco area of Kern County, Continental Oil Company's K. C. L. A-2 wildcat in Section 8-27-24, is coring ahead at 11,645 feet in gray sand, which shows no cut. Some geologists are of the opinion that the sand already encountered may be the Olcese zone, and that the true Vedder may not be found short of 12,000 to 12,500 feet.

Superior Oil Company's deep test in the proven area of the North dome, Kettleman Hills, twisted off drill pipe with bottom at 10,400 feet, and is fishing. Field reports indicate the formation from 10,150 feet to bottom has been interesting, but the company is not giving out any detailed information. This is an old producer, being drilled deeper, seeking the sand found by Kettleman North Dome Association's edge test.

Kettleman North Dome Association's No. 18J-4, with bottom at 11,746 feet, is still fishing for drill pipe, whic has been recovered to 10,772 feet.

Another deep wildcat test is Standard Oil Company's Morris 1 in the Trico area in Tulare County, which is drilling in shale at 11,200 feet. Last casing cemented was 9-inch at 8624 feet. No showings of importance have been found and the hole has passed the point where it was estimated the Vedder zone would be found.

In the Ventura Avenue field in Ventura County, two wells are drilling below 9000 feet. General Petroleum Corporation's Notten 13 is drilling at 9622 feet in shale with 9-inch cemented at 7659 feet. Tide Water Associated Oil Company's Hartman 18, is drilling in oil sand at 9453 feet with

9⅝-inch cemented at 8031 feet. Seven other wells are now drilling in the field.

One important abandonment late in December was Superior Oil Company's K. C. L. 10, an outpost in the Greeley area in Kern County, with bottom at 8405 feet. The location of this hole is 990 feet south and 1650 feet west from the northeast corner of Section 3-30-26, and is southeast of the Greeley proven area.

Los Angeles.—Shell Oil Company of California has purchased Olinda Land Company holdings in Orange County for $500,000. The holdings comprise 2797 acres, a portion of which is productive in the Brea-Olinda field. The Shell Oil Company has had an option for several months and during recent weeks has drilled a number of post holes with considerable success.

Monthly California report shows storage decline

Stocks of crude oil and other petroleum products in California declined 917,914 barrels during November, according to report compiled by the American Petroleum Institute. The total stock decrease for 1937 on the West Coast to the end of November was 7,054,418 barrels. There was a slight increase in stocks of fuel oil and heavy crudes, including gas oil and Diesel oil. Stocks of gasoline showed an increase of slightly more than 306,000.

Total of 100 oil wells were completed in California in November, with a total initial production of 58,888 barrels, and during the same period 20 dry holes were abandoned. The daily average production in the state during November was 701,988 barrels. A daily increase of 7507 barrels over the previous month.

For the first time, two new fields appear in the November report. One was Rio Bravo oil field which is located about 14 miles northwest of Bakersfield, in Kern County and about 3½ miles northwest of the Greely field. The Canal oil field is located about 15 miles southwest of Bakersfield in Kern County and about 4 miles northwest of the Ten Section oil field.

CALIFORNIA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
FRUITVALE—		
H. & H. Oil Co., Neff 1	75	3792
LOST HILLS—		
Standard, United 7	10	1294
MOUNT POSO—		
Shell, Security 22	160	1730
MOUNTAIN VIEW—		
Hogan Pet. Corp., Bankline- Symons 5	400	5575
SANTA MARIA VALLEY—		
Frank Jones, Gallison 1	1000	5197
E. H. Moore, Union Sugar 4	200	5531
Pacific Western, Del Parto 2	2270	4256
Signal O&G Co., Highway 1	800	4432
Sunshine Oil Co., Wallace 2	1000	4404
OXNARD—		
Vaca Oil Explor. Co., Lennox 1	75	2885
GREELEY—		
Superior, K. C. L.	*	8405
KERN COUNTY—		
Standard, Routzong 1	*	5789
WILMINGTON—		
A. C. P. Oil Co., No. 1	45	3910
Bankline Oil Co., Joint Com. 2	275	3322
Royalty Serv. Corp., Heaton 1	75	3611
ORANGE COUNTY—		
Shell, Harbeson 1	*	8608

*Failures; †Junked; ¶Million cu. ft. gas.

IMPORTANT WILDCAT TESTS

ALABAMA

GREENE COUNTY—Greene County Dev. Co.'s R. C. Lett 2, se nw 5-21n-2e, sd 115 ft.

HOUSTON COUNTY — Rice O&G Co.'s Oakley Est. 2, se nw sw 9-3n-29e, arr set 7-in csg, td 4975 ft, Tuscaloosa.

MOBILE COUNTY — Grand Bayou O&G Co.'s J. A. Stafford 1, sw sw 24-7s-3w, lcn. J. C. Prine's King 2, ne ne 4-1n-4w, elev 135 ft, 10-in csg 300 ft, arr deepen 1100 ft (1100 ft s of No. 1).

ARKANSAS

CLARK COUNTY—M. M. Madtin's C. L. Cabe 1, nw nw 14-10-20, dry abn, td 2800 ft.

CRITTENDEN COUNTY—Manning & Martin's Cartright 1, se nw sw 16-7n-8e, dr 2900 ft.

DREW COUNTY — Sloan, Wells et al's Hardy 1, sec nw 3-14-7, rur.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaGrone 1, ne ne 5-12-26, sdtr, td 2944 ft.

MILLER COUNTY—F. F. Earles' General American 1, se se sw 20-14-26, rur. Hearell & Burnett's Willie Wallace 1, se nw se 7-20-27, lcn.

OUACHITA COUNTY—A. H. Tarver et al's Dean 1, sw se 16-14-19, rur. O. F. Whittaker's C. C. Guttry 2, se nw 21-15-19, arr make test, td 2180 ft.

CALIFORNIA

FRESNO COUNTY

JACALITOS CREEK—Dauphin Dev. Co.'s Boone 1, 20-21-14, dr shale 3550 ft.

PANOCHE—J. A. Gautier's Hubbard 1, 12-14-11, sd 510 ft.

COALINGA—F. C. Grime's No. 1, 12-20-15, lcn.

JACALITOS HILLS—Jacalitos Pet. Co.'s Associated 1, 14-21-15, sd 5594 ft.

GUIJARRAL HILLS—Pet. Sec. Co.'s Gatchell 2, 18-20-16, rig.

HURON—Pure's S. P. 1, 31-18-17, dr shale 9470 ft.

CIERVO—Superior's No. 1, 20-16-13, dr shale 918 ft.

TRANQUILITY—Union's Nicholson 1, 17-15-15, dr shale 3138 ft.

CANTUA CREEK—Gulf's S.P.L. 4, 3-17-15, rigged up, standing.

KERN COUNTY

MIDWAY SUNSET—American Empire Oil Co.'s No. 1, 20-31-24, rigged up, standing.

DEVIL'S DEN—Amerada's Beer 5, 22-26-19, dr brown shale, 5590 ft. Little Major Oil Co.'s Jester 1, 36-25-18, dr.

CUYAMA VALLEY—Calif. Prod. Co.'s Job 1, 6-10-24, dr shale 650 ft.

FRUITVALE—Calif. Prod. Co.'s K.C.L. 1, 14-29-27, rigged up, standing. Pacific Oil & Gas Dev. Co.'s Fannuchi 1, 14-29-27, dr 750 ft.

BELRIDGE—Chico-Martinez Oil Co.'s Exeter 1, 1-29-20, dr. General's St. Helens 1, 12-28-20, dr 5575 ft.

WASCO—Continental's K.C.L. A-2, 8-27-24, td 11,584 ft, redrill to 11,581 ft, fsg.

ROSEDALE—Continental's K.C.L. B-1, 12-29-26, td 10,205 ft, redr at 8960 ft; K.C.L. D-1, 10-30-26, lcn.

ARVIN—General's Houchin 1, 27-31-29, td 7928 ft, plug 7361 ft, shut in.

McVAN—Golden Bear Oil Co.'s No. 1, 10-27-27, lcn. No. American Oil Cons. Co.'s No. 1, 26-27-27, dr 610 ft.

GRAPEVINE—Honolulu Oil Corp.'s S. P. 33-1, 33-12-19, dr 5048 ft. Ohio's T. R. C. D-2, 23-11-19, dr sand and shale 5087 ft. Petrol Corp.'s No. 1, 32-11-19, rur. Universal's Tejon 1, 33-11-19, td 4450 ft, producing 150 bbls 28 gravity oil, 2,500,000 ft gas.

CALIENTE CREEK—Geo. W. Johnson's No. 1, 33-29-30, dr 750 ft.

McKITTRICK—Par-Mer Oil Co.'s Par-Mer 1, 6-31-22, dr 2150 ft. Rocima Oil Co.'s No. 1, 20-30-22, dr shale and tar sand 1150 ft.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*	owdd—*old well drilling deeper.*
‡—*salt water (completions).*	owpb—*old well plugging back.*
†—*junked and abandoned.*	pb—*plugged back or plugging back.*
¶—*million feet of gas.*	r—*reaming.*
abd—*abandoned.*	rog—*rig on the ground.*
bbls—*barrels.*	rur—*rigging up rotary tools.*
br—*building rig.*	rust—*rigging up standard tools.*
b.s.—*basic sediment.*	sd—*shut down.*
csg—*casing.*	sdtr—*sidetracking.*
co—*cleaning out.*	sg—*show gas.*
dd—*drilling deeper.*	si—*shut in.*
dk—*derrick.*	so—*show oil.*
dr—*drilling.*	so&g—*show oil and gas.*
fsg—*fishing.*	spd—*spudding.*
ft—*feet.*	sr—*straight reaming.*
hfw—*hole full of water.*	sw—*salt water.*
in—*inches.*	td—*total depth.*
lcn—*location.*	ur—*underreaming.*
m—*milling.*	wih—*water in the hole.*
mim—*moving in materials.*	wo—*workover.*
mit—*moving in tools.*	wocs—*waiting on cement to set.*
mot—*milling on tools.*	wosr—*waiting on standard rig.*
n, s, e, w—*north, south, east, west.*	
oih—*oil in hole.*	

ROUND MOUNTAIN—Richfield's Olcese 1, 17-28-29, grading lcn. Shell's Olcese-Lilly 2, 21-28-29, rig.

McFARLAND—Shell's Keystone 1, 4-26-27, bldg rig.

STRAND—Shell's K.C.L. A-72, 14-30-25, dr 7678 ft.

SAN EMIDIO—Shell's No. 4-26, 26-11-22, td 3012 ft, wocs 13⅜ in. 2324 ft.

TEN SECTION AREA—Standard's K. C. L. 15-1, 27-30-26, td 8070 ft in oil sand 9 in, froze and cemented at 6313 ft.

SEMITROPIC—Standard's Randolph Com. 2, 14-27-23, dr sandy shale 8138 ft.

McGUNDEN—Standard's Routzong 1, 2-30-28, abn 5789 ft.

GREELEY AREA—Superior's K.C.L. 9, 3-30-26, td 7870 ft, perforated 7443 to 7445 ft, co at 7583 ft, to reperforate.

SO. MARICOPA—Texas Co.'s Pioneer 1, 33-11-23, dr shale 5867 ft.

KERN FRONT—Vernon & Wheedon's No. 1, 28-28-27, dr shale 1776 ft.

GLENN COUNTY—Ohio's Willard 1, 18-20-2, dr 3285 ft.

HUMBOLDT COUNTY—Texas Co.'s Eureka 2, 22-3-1, td 7708 ft, plug 5737 ft, gas well, shut in.

KINGS COUNTY — Pyramid Prod. Co.'s Retherford 1, 28-24-18, td 1540 ft, r to straighten hole.

MERCED COUNTY—Amerada's Carano 1, 19-10-11, dr gray sand and streaks shale 7130 ft.

SAN JOAQUIN COUNTY—Standard's Weil-Zuckerman 2, 25-2-4, dr shale and gray sand 6950 ft.

SANTA MATEO COUNTY—Bergman Oil Co.'s No. 1, 10-6-5, lcn. Wilshire's Cowell 1, 20-6-5 (Half Moon Bay), dr shale 5610 ft.

SOLANO COUNTY—Tracy Dr. Co.'s Hanson 2, 36-4-2, td 4380 ft in sand, 8⅝ in cemented 3945 ft, ran 450 ft of 4¾ in liner including 419 ft perforated, landed 4375 ft, running tubing.

TULARE COUNTY—Standard's Morris 1, 36-24-23, dr shale 11,200 ft. Si Wicker's No. 1, 1-24-27, lcn.

MONTEREY COUNTY—Elba Oil Co.'s Elba 2, 6-12-1, rig.

SAN LUIS OBISPO COUNTY—Ajax Pet.

Co.'s No. 1, 27-26-13, rig. Cholame Synd.'s Jack 2, 10-25-15, td 3641 ft, co.

SANTA BARBARA COUNTY—E. C. Arnold's Arnold-Apache 2, 8-8-33, td 6370 ft, pumping to sump, oil and water. Carpinteria Oil Co.'s No. 1, 34-4-2, rigged and idle. O. C. Field's Santa Rita 1, 11-7-33, td 3358 ft, shot casing at 3024 ft, squeezed with cement, co. Standard's Los Flores Land 1, 27-9-33, dr 2282 ft. United Western Oil Co.'s No. 1, 16-7-30, sd 1032 ft. Wilshire's Hollister 1, 35-33, rigged up, standing.

VENTURA COUNTY — Oxnard Oil Co.'s Vanoni 1, 10-1-22, td 6302 ft, plug 6200 ft, pulled liner, co, to drill deeper. Vaca Oil Explor. Co.'s Lennox 1, 6-1-21, td 2855 ft, see completion. Richfield's McFarland 1, 13-2-21, dr shale 6722 ft. Texas Co.'s Edwards 1, 13-3-21, dr shale 5200 ft. Joint test (General Pet., Honolulu Oil, Richfield, Shell, Standard and Texas, was Seven Seas Oil Co.), No. 1, 15-1-22, td 1038 ft, to drill deeper.

SOUTHERN CALIFORNIA

WILMINGTON AREA—Alford Dev. Co.'s Classif. Yards 3, 22-4-13, dr shale 5765 ft, no showings.

PALMDALE — Antelope Valley Pet. Co.'s No. 1, 17-6-12, rur, laying water lines.

NEWHALL—Barnsdall's Rancho S. F. 2, 26-4-17, coring 6090 ft, top oil sand 6043 ft. West Coast Dev. Corp.'s Newhall Land 1, 27-4-16, sd 1206 ft.

PICO CANYON—Downey Oil Corp.'s No. 1, 36-4-17, td 2495 ft, co.

PALOS VERDES—Hunter-Devlin & Associates' No. 1, 17-4-14, td 5502 ft, plug 5262 ft, water broke in, standing recemented at shoe.

WALNUT—Julian & Criswell's Langstaff 1, 5-2-9, sd 2855 ft.

MONTEREY PARK — W. E. Ramsey's Monte Christie Oil Co.'s Bass-Goodnight 1, 27-1-12, dr shale 2390 ft.

CASTAIC—Royal Lands Corp.'s No. 1, 8-4-17, td 485 ft, redr at 195 ft.

GARDENA—Texas Co.'s Gardena Com. 1, 30-3-13, dr shale 4736 ft.

ORANGE COUNTY—Shell's Harbeson 1, 9-4-10, abn 8608 ft.

SAN BERNARDINO COUNTY — Selegna Dr. & Pro. Co.'s Abacherli 3, 12-3-8, dr shale 1165 ft. Crafton Hills Oil Co.'s East Redlands 1, 24-1-2, lcn.

FLORIDA

LAKE COUNTY—Oil Dev. Co. of Fla.'s Gulf Expl. Co. 2, se se 17-24s-25e, elev 120 ft, arr set pckr and re-test at 2600 ft, old td 6126 ft.

LEVY COUNTY—Fla. Oil Discovery Co.'s Sholtz 2, sw sw ne 9-15s-13e, dr 1920 ft (no recent report).

NASSAU COUNTY—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw ne se 19-4n124e, elev 110 ft, dr 3834 ft, shale and gumbo.

SUWANEE COUNTY—Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, 16-in csg at 190 ft, sd 200 ft for heavier rig.

COLORADO

ARCHULETA COUNTY — Prospect Oil Synd.'s Garret 1, sw sw ne 13-33n-2e, 1535 ft in Mancos shale with beds dipping 40 degrees.

BOLDER COUNTY — J. B. Firstenberg's Foote 1, se 20-1n-70w, dr 2930 ft.

GARFIELD COUNTY—Roaring Fork Oil Co.'s Patterson 1, sw ne ne 36-7s-88w, cemented 8¼ in csg 721 ft, td 735 ft.

LaPLATA COUNTY — McGarr Pet. Co.'s Test 1, cnl ne se 27-33n-12w, dr 1292 ft. Nick Spatter's Bryce 1, se sw sw 31-33n-9w, dr 1292 ft, so at 1280-90 ft.

MONTEZUMA COUNTY—Coon & Teague's West 1, se nw ne 31-36n-17w, dr 3840 ft with 4¾ in csg set at 3830 ft.

PITKIN COUNTY — Glencoe Dev. Co.'s Government 1, nw nw nw 9-10s-89w, sd 2805 ft.

PARK COUNTY—South Park Oil Co.'s Lemarr 1, ne ne se 34-11s-75w, dr 5525 ft.

PUEBLO COUNTY—Ed Solomon's Smith 1, ne 11-21s-60w, building rig.

RIO BLANCO COUNTY—California Co. & Texas Co.'s Greeman-Government 1, cne ne 35-3n-94w, Wilson Creek structure, tested 1480 bbls of 43 gravity crude daily on 45 minutes open thru dr stem at 6664 to 6704 ft and coring at 6731 ft for major objective, Sundance sand.

ILLINOIS

BOND COUNTY—Universal Wells Serv. Co. et al's Molder 1, nw nw nw 24-6n-4w, td 1914 ft, fsg core bbl. A.T. Whitehead et al's Pollan 1, nw se sw 26-2n-2w, sd 2633 ft. W. C. McBride's Butler 1, nw sw se 30-4n-2w, mim.

CHRISTIAN COUNTY—Rogers Bros. et al's Johnson 1, ne se se 27-12n-2w, abd 3112 ft.

CLAY COUNTY—Southern Ill. Pet. Co.'s Knodacker 1, nw se sw 23-3n-7e, sd 2933 ft. C. H. & C. Oil Co. et al's Duff 1, cs½ nw ne 7-3n-8e, filled w/sw, to abd. J. E. Milburn's Striegle 1, se nw ne 19-3n-8e, der. Bonnie Oil Co.'s Schnautz 1, se sw ne 31-4n-8e, cor 3036 ft. Vermillion Oil Co.'s Duff 1, cs½ ne se ne 19-3n-8e, dr plugs. Wiser Oil Co. et al's Irwin Est. 1, cn½ se nw 12-2n-7e, dr 2080 ft. J. V. Wicklund's McCauley 1, "A", ne sw nw 7-2n-9e, der. Campbell et al's Walrer Henderson 1, cn½ ne ne 7-4n-7e, c & p. Carter Oil Co.'s Cox 1, ce½ se sw 14-4n-5e, cel.

CLINTON COUNTY—R. E. Dalton's Clifton 1, ne sw sw 15-1n-4w, sd 483 ft. Holley & Willis' Muex 1, ce½ ne ne 18-3n-2w, dr 1141 ft. Ellzy et al's Williams 1, sw nw sw 1-3n-1w, dk. Schlosberg & Siegel's Monken 1, ne sw sw 4-2n-1w, ur 1340 ft. Watkins & Wright's Williams Wise 1, nw nw se 24-1n-3w, mim.

COLES COUNTY—W. J. Miller et al's Tomberlin 1, se se se 21-11n-10e, spd. W.E. Hughes' Swango 1, csw ne 27-13n-9e, dr 405 ft.

CUMBERLAND COUNTY—Jolly-Hill-Stipes et al's Jenkins 1, se ne ne 30-10n-9e, sd 2030 ft. Chas. Kapschuell's C. Oakley 1, sw ne sw 34-10n-8e, rot dk.

EDWARDS COUNTY—Cotton & Laller's Hays 1, ne ne ne 4-1s-10e, lcn.

EFFINGHAM COUNTY—Kingwood & Carter's Bartel 1, ce½ ne nw 26-6n-5e, td 4102 ft, testing. Samuel Hollis et al's Harrman 1, nw se sw 32-8n-6e, rur.

FAYETTE COUNTY—Benedum & Trees' Moore-Clayton Van Zandt 1, sw sw sw 24-6n-1w, abd 3155 ft. Hausman et al's Northwestern 1, csw ne 22-6n-1e, abd 1733 ft. Carter's Miller 1, cw½ nw nw 12-8n-3e, pumping. Schroeder et al's Lilly 1, se sw se 16-8n-3e, ur 8 in csg 1075 ft. Carter's Clow 1, ce½ sw ne 15-8n-3e, dr 1503 ft. Wilson & Stokes' Fee 1, nw sw ne 14-8n-3e, lcn. W. B. Greer's Metzger 1, cn½

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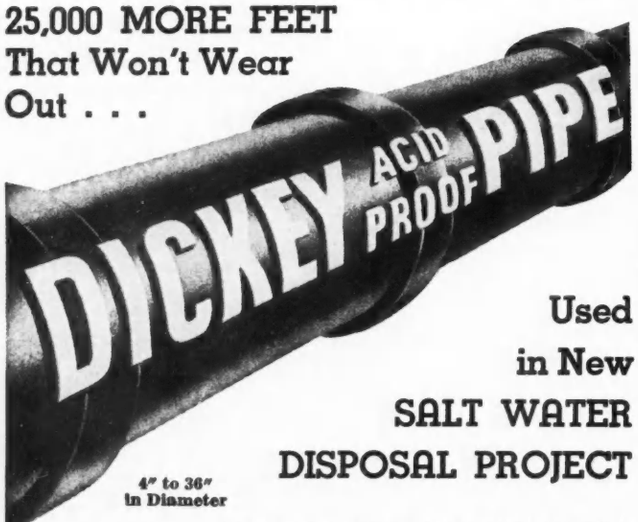

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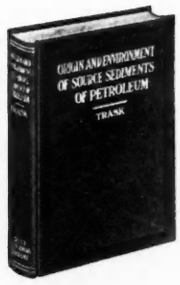

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FRANKLIN COUNTY—Robert Markham's Whittington 1, ce½ sw se 18-5s-3e, woc 290 ft. Washburn Pet. Corp.'s Neil 1, ce½ se se 6-5s-4e, sd 1618 ft.

GREENE COUNTY—M. V. Yeager's Robinson 1, se sw nw 17-10n-11w, ur 1375 ft. Nat'l. Consumers Oil Co.'s Jackson 1, nw ne nw 21-11n-12w, abd 2451 ft.

HAMILTON COUNTY—Carpenter et al's Clarke 1-A, nw nw sw 32-3s-5e, sd 1000 ft.

JASPER COUNTY—C. R. Overmeyer's Atkins 1, nw nw ne 3-6n-9e, sd. Denver P & R Co.'s Ochs 1, nw nwne 33-6n-14w, dr 2728 ft. Hoffman et al's King 1, sw nw nw 20-8n-10e, sd 2672 ft.

JEFFERSON COUNTY—Siegel & Schlosberg's Schneider 1, ne ne se 15-1s-1e, mi dr pipe. Carter's Tate 1, cw½ nw ne 10-1s-2e, to pb & test. Sturbois & Tomberlin's Osborne 1, cnw se 8-2s-2e, der. Nollem & Benoist's Kelley 1, ne nw ne 25-4s-2e, td 1885 ft. E. J. Dees & W. J. Carter's Hamilton 1, ne sw nw 20-4s-3e, 225 ft oih, sd. Sturbois & Tomberlin's J. B. Morris 1, nw nw sw 6-2s-2e, dk. Benedum & Trees' Arthur Owen 1, nw se sw 23-4s-3e, dr 1700 ft.

JERSEY COUNTY—Boyd et al's Wyman 1, nw se nw 32-7n-12w, sd 930 ft.

MARION COUNTY—Dee & Nordan's Roddy 1, sw se sw 20-2n-3e, fsg tools 2182 ft. Bonnie Oil Co.'s Daniels 1, cse¼ 18-2n-4e, sd 2801 ft. Marion Oil Co.'s Wilson 1, ne ne se 18-3n-3e, sd 1200 ft. Coleman-Blosser's Britt 1, nw nw nw 36-4n-1e, sd 1200 ft. Mahutske Oil Co.'s Nichols 1, se sw se 12-4n-4e, dr 2750 ft. Alexander et al's Pope 1, ne ne ne 26-3n-1w, sd 1304 ft. W. C. McBride's Clow 1, sw sw se 29-2n-1e, dr 558 ft. Helmerich & Payne's Stephens 1, sw sw sw 35-3n-4e, spd & sd. Evans et al's Morey 1, se se nw 4-4n-1e, mi mach. Schriver et al's Schreurer 1, se se ne 12-4n-1e, sdo 1600 ft.

MASSAC COUNTY—Kahle et al's Harvick 1, sw sw sw 23-14s-3e, cor 2840 ft, no shows.

MONTGOMERY COUNTY—Schlosberg & Siegel's Nieman 1, cse sw 29-8n-5w, dr 811 ft.

POPE COUNTY—C. C. Whitlock et al's Anthis 1, nw nw ne 12-11s-5e, sd 1352 ft.

RANDOLPH COUNTY—W. A. Delaney & J. E. Mabee's Wilson 1, ce½ se ne 3-4s-5w, td 2860 ft. Pioneer O&G Co.'s Hohnie 1, se nw nw 28-6s-6w, sd 552 ft.

RICHLAND COUNTY—Hollingsworth O&G Co.'s Waggoner 1, ne nw nw 5-3n-14w, abd 3248 ft. Mammoth P&R Co.'s McCauley 1, sw se nw 28-3n-9e, co 3146 ft. Sam Raitman's Richey 1, cne nw 12-4n-14w, lcn. Bill Loving et al's Blue Ridge Church 1, ne ne se 26-4n-9e, bldg dk. Ray & Alford's Franklin 1, nw nw ne 34-5n-10e, rig. Kingwood & McMahon's Negley Bros. 1, nw nw se 31-5n,9e, abd 3200 ft. Frost's Farris 1, sw sw se 18-3n-10e, td 3083 ft, swb. Parker et al's Berry 1, se sw ne 22-2n-14w, spd & sd. Mammoth P&R Co.'s Brace 1, sw sw ne 28-3n-9e, swb 70 bbls oil net. Papoose Oil Co.'s Lynch 1, cne nw ne 5-3n-10e, lcn. Bur-Kan Oil Co.'s Allen 1, csw nw 27-4n-10e, mi rot.

SALINE COUNTY—Will Rogers et al's Saylor 1, se se se 3-10s-6e, sd 1125 ft. C. F. Bolton's Beagle 1, nw nw ne 13-9s-7e, dr 980 ft.

SCOTT COUNTY—Gregory & Mechling et al's Foltz 1, nw sw ne 31-14n-14w, sd 1196 ft.

SHELBY COUNTY—E. Breaseale et al's Richardson 1, cnw nw 35-12n-14e, spd 18 ft & sd. Ray Farrior's Fritz 1, ne ne ne 1-12n-2e, lcn.

WABASH COUNTY—Martin et al's W. R. Wood 1, ne se nw 31-1n-12w, fsg 842 ft. Deck & Hays' Provident Mutual 1, cse nw 25-1s-13w, dr 1450 ft.

WARDS COUNTY—Dr. W. F. Schmidt's Strenne 1, ne nw ne 5-1n-14w, spd & sd. Leach Bros.' Lee 1, sw ne se 11-1s-10e, dr 2937 ft. Harry Cotton's Leibke 1, ne ne sw 20-1n-14w, c & p. Cotton & Laller's Hays 1, ne ne ne 4-1n-10e, lcn.

WASHINGTON COUNTY—Silvers et al's Paul 1, nw nw se 29-3s-5w, spd & sd.

WAYNE COUNTY—Gordon et al's Taylor 1, cnw sw sw 15-1n-7e, mim. Texas Co.'s Silverman 1, ce½ sw nw 16-3s-7e, testing. cnw sw sw 15-1n-7e, mim. TexasUQ

WHITE COUNTY—Davis & Harrell's Poorman 1, ne nw nw 5-4s-8e, dr 3185 ft.

WILLIAMSON COUNTY—Edward C. Snyder's Flemming 1, cse ne 9-10s-2e, mim.

WYOMING

HOT SPRING COUNTY — Deleware Oil Co.'s Government-Skelton 1, se se 2-43n-96w, set 10 in csg 80 ft.

NATRONA COUNTY—General Pet. Corp.'s Government 1, nw nw se 21-35n-77w, set 11¾ in csg at 4624 ft and dr at 4671 ft.

WESTON COUNTY—John Borby's George 1, sw se nw 12-47n-64w, dr 1862 ft.

SWEETWATER COUNTY—Mountain Fuel Supply Co.'s John W. Hay, Jr., ne se 2-19n-110w, sd 5330 ft; Ellis 1, cse se se 8-18n-109w, sd 100 ft.

KANSAS

BARBER COUNTY—Palmer Oil Corp. et al's Warwick 1, cnw 29-31s-10w, ru & sd. Kansan Oil Corp.'s Mease 1, ne se se 27-30s-11w, dr 4910 ft. Pryor & Lockhart's Pickens 1, cwl e½ sw 34-30s-14w, dr 4382 ft. Helmerich & Payne's Winter 1, nw nw sw 16-32s-10w, dr 3450 ft.

BARTON COUNTY—C. L. Price et al's Hammeke 1, ne ne sw 12-18s-12w, bailing. Martin & Foraker et al's Dick 1, ne sw sw 31-19s-11w, mim. Shell's Ehrlich 1, sw sw sw 1-16s-14w, dd to 3296 ft, 28 ft oih. Ash et al's Frees 1, nw nw nw 34-16s-11w, dr 2152 ft. R. E. Day et al's Feltes 1, se se ne 14-16s-12w, dr 1400 ft. Shell's Eckart 1, se se sw 13-16s-14w, rust. Lauck & Moncrief & Vernon O&G Co.'s Rodenburg 1, ne se sw 6-17s-12w, abd 3518 ft. Thayer Drlg & Brouk Soderstrom 1, se se nw 21-17s-13w, dr 2050 ft. Sinclair Prairie's Oeser 1, ne ne se 17-16s-11w, surf pipe set.

BUTLER COUNTY — Reeves & Kinnan's Heim 1, sw sw sw 5-29s-3w, dr 860 ft. Steinbuchel et al's Fox 1, nw se ne 25-26s-3e, dr 810 ft. T. S. Dustin's Miley 1, se nw ne 17-27s-5e, sd 395 ft.

CHAUTAUQUA COUNTY—Harrison et al's Brown 1, ne se ne 19-34s-10e, sd 820 ft. I. W. Siegles' Temple 1, sw sw sw 31-32s-12e, dr 400 ft. Sooby et al's Davis 1, sw ne nw 29-33s-10e, td 1019 ft, making 1 bbl oil per day.

CLARK COUNTY—Olson Oil Co.'s Lehman 1, se se sw 20-32s-21w, dr 3777 ft. Olson Oil Co. et al's Watkins 1, sw sw nw 23-32s-21w, dr 6283 ft.

COWLEY COUNTY—Pryor & Lockhart's Brown 1, ne se se 34-33s-3e, abd 3403 ft. Smith & Price Henderson 1, sw sw sw 25-32s-6e, dr 2970 ft. Earl Wakefield's Whitson 1, sw ne se 8-32s-4e, run 6 in csg, 3294 ft. Murta-Wilson et al's Stuber 1, se ne ne 27-30s-5e, abd 2907 ft. Dickey Oil Co.'s Kansas G&E Co. 1, ne ne ne 22-34s-3e, cor 3270-77 ft, rec 3 ft w/oil stain. Roth & Faurot's Fry 1, nw sw sw 8-31s-3e, ur 8 in csg 1830 ft. Trees Oil & Talbott's McMinn 1, ne ne nw 16-31s-6e, ru.

EDWARDS COUNTY—Douglas & Gear's Meade 1, se se nw 35-25s-16w, sdo.

ELLIS COUNTY—P. G. Reynolds et al's Karlin 1, nw nw nw 13-12s-18w, fsg 3675 ft. Skiles et al's Jensen 1, sw se ne 26-12s-18w, sd 2910 ft. Colonial Oil Co. & Bernheimer's Allbert 1, sw sw ne 13-12s-18w, abd 3958 ft. Glimac Oil Co. et al's K.C. Life Ins. Co. 1, se sw nw 5-11s-18w, dr 720 ft. Colonial Oil Co.'s Hadley 1, se ne se 5-11s-18w, mim. Bradley Oil Co.'s Jensen 1, nw nw se 36-11s-19w, show sul wtr. C. L. Carlock's Heyle 1, se se nw 14-13s-16w, dr 2380 ft. Continental's Baumrucker 1, ne ne sw 25-14s-16w, dr 3030 ft. Helmerich & Payne et al's Stebbins 1, nw nw se 7-13s-20w, dr 3598 ft. J. J. Muth's Penney 1, cnl ne se 29-14s-18w, co. Watchorn O&G Co.'s Brown 1, ne ne se 34-13s-17w, td 3529 ft, aw/1000 gals, swb 4 bbls oil per hr and sw. General Mach & Tools Co.'s Jensen 1, sw se ne 26-12s-18w, dr 3335 ft. Witt & Sheridan et al's Hall 1, nw sw ne 1-12s-17w, lcn.

ELLSWORTH COUNTY—Colonial Oil Co.'s Hogy 1, nw nw sw 16-16s-10w, dr 1685 ft. Hinkle et al's Andrea 1, ne ne se 17-17s-10w, dr 2895 ft. Ralph Wixon et al's Peterman 1, sw sw sw 28-17s-10w, dr 1685 ft.

GRAY COUNTY—P. G. Reynolds' Watkins 1, csw 32-28s-28w, rot rig.

GREENWOOD COUNTY — Whittaker & Johnson's Cannon 1, cel se nw 8-26s-13e, td 1504 ft, rng 5 in csg. John Nichols et al's Central Life 1, sw sw se 35-25s-12e, spd & sd.

HARVEY COUNTY—Allison & Fitzwilliams et al's Hawk 1, se sw ne 16-24s-1w, dr 3560 ft. Natl. Ref. Co.'s Brown Bros. 1, nw se ne 22-23s-2w, dr 915 ft.

JACKSON COUNTY—Lemmick Oil Co.'s Marble Savings Bank 1, cne ne 26-9s-14e, sd 510 ft.

JEWELL COUNTY — Hollingsworth Bros.' Wolfe 1, nw sw se 14-4s-8w, spd & sd.

LANE COUNTY—Phillips' John Kees 1, cse se 3-19s-30w, dr 545 ft.

MARION COUNTY—Tom Palmer et al's Matz 1, sw sw se 8-19s-1e, dr 3283 ft.

McPHERSON COUNTY — Dole-Park Dev. Co.'s Doles 1, ne nw ne 12-19s-1w, abd 3471 ft. Clyde Pulse et al's Boesker 1, se se nw 29-20s-1w, rig. Boyle & Grossman's Diener 1, se se ne 35-19s-1w, dr 3062 ft. Carter's Hoglund 1, cw½ sw nw 8-17s-3w, dst 3369-78 ft, no show. Phillips' Galle 1, nw nw ne 11-21s-2w, dr 3275 ft. Archer & Crane's Templin 1, nw sw se 32-17s-3w, dr 1340 ft.

MEADE COUNTY—Pacific Mid-West Oil Co.'s Rexford 1, ne se sw 8-30s-29w, sd 900 ft. Barnett et al's Adams 1, sw sw ne 22-34s-30w, rot rig.

NESS COUNTY—Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, fsg 3265 ft. Marshall Drlg. Co. et al's Anderson 1, sw sw nw 23-16s-24w, spd & sd. Trojan O&G Co.'s Moses 1, cnw nw 10-18s-25w, sd 500 ft. Continental's Olson 1, sw nw nw 5-18s-25w, rust.

PAWNEE COUNTY—Stanolind & Amerada's Jantz 1, sw sw sw 25-20s-16w, pb 3812 ft, shot w/20 qts, swb ¾ bbls oil & wtr per hr.

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of the
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By
DAISY WINIFRED HEATH

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(20 Years of Geology of Oil and Gas)

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Box 979
Tulsa, Oklahoma, U.S.A.

Phillips' F. A. Johnson 1, cne sw 8-20s-19w, abd 4417 ft.

PHILLIPS COUNTY—C. W. Davidson et al's Elliff 1, se ne ne 35-5s-18w, sd 575 ft.

PRATT COUNTY—Skelly et al's Adams 1, se nw ne 2-28s-11w, pb 4204 ft. Helmerich & Payne et al's Holme 1, se se ne 20-26s-1w, dr 4110 ft. Ohio's Howell 1, csw sw 21-29s-15w, woc 985 ft.

RENO COUNTY — Sam Schneider et al's Kroecker 1, ne ne ne 12-22s-5w, dr 3977 ft. Street & Butler's Kincaid 1, ne ne nw 13-24s-4w, ru & sd. Carey et al's McPheeters 1, ne ne nw 22-26s-8w, rng 10 in csg 2067 ft. W. E. Witt et al's Fair 1, nw se se 4-22s-8w, P. 25 bbls oil, 8 hrs. Coehn et al's Teter 1, se se sw 3-23s-5w, ru & sd. Westgate-Greenland Oil Co. et al's Popp 1 sw sw ne 7-25s-4w, dr 3960 ft. McCole et al's Mathews 1, sw nw nw 15-24s-10w, ru.

RICE COUNTY—Skiles et al's Campbell 1, se se ne 28-19s-9w, co 2975 ft. Joe Aylward's Weihe 1, sw sw ne 23-18s-9w, fsg 1915 ft. Price et al's Gemeinhardt 1, ne ne se 18-18s-10w, run 12 in csg 225 ft. Western Kansas' Bailey 1, sw sw nw 19-20s-6w, lost hole at 1032 ft, new hole, set 12 in csg 129 ft, woc.

ROOKS COUNTY—Producer Oil Co. et al's Ham 1, sw sw nw 25-7s-19w, dr 270 ft. Graham et al's Fike 1, sw sw sw 9-9s-17w, fsg. C. R. Craft et al's Ziegler 1, ne ne se 8-10s-16w, abd 3581 ft. Colonial Oil et al's Tucker 1, sw se nw 23-10s-17w, abd 3759 ft. Ross Oil et al's Hancock 1, ne ne nw 5-10s-17w, abd 3697 ft. Witt & Sheridan et al's Morrison 1, nw se sw 29-10s-17w, rot rig. Elwell et al's Zimmerman 1, ne ne nw 15-9s-18w, ponds. Colonial Oil et al's Hancock Life Ins Co. 1, nw sw sw 21-10s-18w, rot rig.

RUSH COUNTY — Wakefield & Brouk's Kerbs 1, nw nw se 11-17s-16w, dr 3420 ft.

RUSSELL COUNTY—Emrichs et al's Anderson 1, ne se sw 33-15s-11w, spd & sd. Murfin & Vernon O&G Co.'s Pearson 1, ne ne ne 31-15s-15w, dr 3421 ft. Jones & Shelbourne's Short 1, ne ne ne 12-15s-12w, dr 2535 ft. Phil-Han & Hinkle's Reinhardt 1, se se sw 19-14s-14w, dr 3070 ft. Shields et al's Rogg 1, nw nw sw 28-14s-13w, co 675 ft. Parks et al's Gorham Est. 1, sw nw ne 19-15s-15w, ru.

SEDGWICK COUNTY—I. W. Murfin et al's Martin 1, se se nw 18-28s-1e, swb 45 bbls oil, 24 hrs. W. C. Talbott et al's Downs Est. 1, se se nw 32-28s-2e, testing. Union O&R et al's Howell 1, sw sw sw 6-29s-1e, sd 2400 ft. Frank Hudson et al's Fulton 1, ne ne se 35-28s-1e, fsg 1550 ft. McKnabb et al's Garrett 1, se sw sw 18-29s-1e, sd 100 ft. Steinbuchel's Shaffer 1, sw sw nw 18-25s-1e, td 3685 ft. Steinbuchel et al's McAdams 1, sw sw ne 28-29s-1e, ru.

STAFFORD COUNTY—Hinkle et al's Moses 1, nw nw sw 9-22s-13w, sso 3524-25 ft. Torry & Feaster et al's Heggy 1, ne ne sw 26-33s-11w, surf pipe set. Stanolind's Wadsack 1, sw sw ne 4-25s-11w, abd 4089 ft. Torry & Feaster et al's Negley 1, sw sw ne 23-22s-12w, dr 692 ft. Lindsay & Bailiere et al's Tiepermann 1, sw sw nw 31-22s-12w, dr 3663 ft. Cardinal Oil & Carraker (was Winemiller) et al's Sittner 1, sw sw sw 4-22s-12w, mim. Rust et al's Sims 1, nw nw sw 8-23s-11w, dr 3610 ft. Torry & Feaster et al's Landerman 1, sw sw ne 23-22s-12w, abd 3689 ft.

SUMNER COUNTY — W. M. McKnab's Blair 1, sw sw sw 7-30s-1e, td 3869 ft; swabbing. R. J. Wixon's Newton 1, se se se 31-30s-2e, abd 3600 ft. Saco Oil & Cameron et al's Phipps 1, sw se ne 24-30s-1w, spd & sd. Hugh T. Jones et al's Stunkel 1, se se sw 2-30s-1w, rig. E. B. Shawver's Stewart 1, nw nw se 4-32s-3w, mim.

TREGO COUNTY—Carlock's Kinzel 1, sw sw sw 9-13s-22w, spd & sd. Manning & Martin et al's Lynd 1, nw nw sw 16-11s-21w, mim.

WOODSON COUNTY—Charles Reeser et al's Werde 1, nw nw se 18-25s-14e, sd 1150 ft.

NORTH LOUISIANA

BIENVILLE PARISH—De Soto O&G Co.'s Ashley 2, c sw se 15-16n-10w, ru and sd. Gulf's Goodpine Oil Co. 1, se sw 25-14n-8w, elev 157 ft, massive anhydrite 5303-5420 ft, coring 6675 ft. Hunt & Seaboard's Federal Land Bank 1, c s½ 10-16n-6w, elev 296 ft, 7-in csg 6867 ft, completed 6 mil ft dry gas daily through ¼-in choke 7879 ft (Travis Peak).

BOSSIER PARISH—Union Prod. Co.'s Kerr 1, c se 24-17n-12w, dr 4511 ft (lower Marine test).

CADDO PARISH—A. O. Olsen's Sharp 1, c w½ nw 15-18n-16w, gauged 14,450,000 ft gas daily, td 5624 ft. Prairie River Synd.'s Hutchinson 1, sw nw 15-15n-12w, elev 153 ft, top lower Marine 8380 ft, top Bodcaw sand 8775 ft, tested sgo 8987-9110 ft, arr deepen, td 9141 ft. A. D. Robinson et al's Dickson 1, 22-20n-14w, elev 185 ft, top Nacatosh 870 ft, base chalk 1690 ft, arr set csg, td 2453 ft (Tokio).

CATAHOULA PARISH—G. E. Foster et al's Peck 1, c s½ 39-10n-8e, spd.

CLAIBORNE PARISH—W. L. McClanahan's J. T. Lewis 1, sw se 25-20n-7w, elev 400 ft, top Hill 5152 ft, sd 5507 ft. Union Prod. Co. et al's Brownfield 2, c se nw 5-19n-5w, elev 235 ft, top lower Marine 7860 ft, dr 8558 ft; Hawks 1, 1-19n-6w, completed as gasser, si for gauge, td 5741 ft (Travis Peak).

DE SOTO PARISH—Clear Lake Oil Co.'s Woolums 1, nw nw 29-12n-12w, cored sand so, sd for casing, td 2694 ft. Wright, Harris et al's (Kingston Oil Co.), Scott 1, ne ne 32-14n-13w, co caving hole, td 2778 ft. La. Seaboard's Lawrence 1, sw ne 36-12n-14w, dk.

LINCOLN PARISH—E. T. Oakes, H. D. Easton et al's N. L. Griggs 1, c sw 36-18n-1w, elev 199 ft, top anhydrite stringer 4253 ft, massive anhydrite 4493-4713 ft, cored oolitic lime sg 5173-91 ft, oolitic lime oil stains 5314-26 ft, top Travis Peak 5975 ft, Petitt sand with good resistivity and fair porosity 5932-41 ft, cemtd 5½-in csg 6121 ft, arr perf and test at 5932-41 ft in basal Glen Rose (Petitt), td 6260 ft, brown shale, with slickensides.

MADISON PARISH—Continental Oil Co.'s Singer Mfg. Co. 1, 3-15n-11e, mim.

MOREHOUSE PARISH—H. J. Furlong, Jr. et al's Clark 1, 10-20n-7e, dr 4674 ft.

RED RIVER PARISH—Ark. Fuel Oil Co.'s Franklin Realty Co. 1, c ne nw 20-11n-9w, top anhydrite 4960 ft, coring lime and shale 5556 ft.

SABINE PARISH—J. C. Sutton Oil Co.'s Sabine Lbr. Co. 1, se nw ne 23-7n-14w, woc 16-in surf csg (10,000 ft test).

TENSAS PARISH—H. M. Jones' Chicago Mill 2, c ne sw 31-12n-10e, sd 750 ft.

UNION PARISH—Joe Modisett et al's Frost 1, ne sw 14-21n-1e, elev 188 ft, top Travis Peak 4050 ft, 9⅝ in csg 4358 ft, top lower Marine 6145-6200 ft, sd 7010 ft.

WEBSTER PARISH—Magnolia's Sexton 1, c sw ne 32-23n-9w, 13⅝ in csg 838 ft, dr 3155 ft shale.

SOUTH LOUISIANA

ACADIA PARISH—J. E. Daniel's Setting 1, Trilby area, 17-7s-1w, sd 3680 ft. Gulf's Broussard 1, Midland area, 49-10s-2w, setting 7-in csg 9678 ft. Humble's Sarver 1, South Crowley prospect, 35-10s-1e, tearing down rig 10,272 ft.

CALCASIEU PARISH—D & D Oil Co.'s Lutcher Moore 2, nw of Starks, 1-8s-13w, no report. Republic's Sabine Tram 1, w of Starks, 25-8s-14w, fsh 9670 ft. Union Sulphur's American Oil and Sulphur Co. 1, s of Sulphur, 16-10s-10w, dr shale 8003 ft.

CAMERON PARISH — Humble's Miami Corp. 1, Catfish Lake area, 8-14s-5w, dr shale 10,177 ft. Superior's State 1, in Gulf of Mexico, 4-15s-8w, coring shale 7760 ft.

EAST BATON ROUGE PARISH — Cavalier's Elliott 1, Hope Villa area, 3-8s-2e, sd 7678 ft.

IBERIA PARISH—Texas Co.'s State 2-B, Vermilion Bay, 20-15s-6e, sd 9068 ft.

JEFFERSON DAVIS PARISH—Continental's Fay 1, se of South Roanoke, 31-10s-3w, dr shale 10,160 ft. Humble's Stegall 1, nw of Welsh, 20-9s-5w, dr hard sand 8759 ft. Union Sulphur's Calcasieu National Bank 1, e of Woodlawn, 12-9s-8w, testing 8292 ft.

LAFOURCHE PARISH—Amerada-L. L. E.'s South Coast 1, Raceland area, 34-15s-19e, woc 10,314 ft. Gulf's State PP 3, Timbalier Bay, 36-23s-21e, testing 6968 ft.

ST. BERNARD PARISH—Gulf's State 2 RR, Lake Borgne, 38-14s-15e, dr shale 4998 ft.

ST. MARTIN PARISH—Shell's Frederick 1, Arnaudville area, 38-8s-5e, dr shale 8769 ft. Shell-Tide Water's Unit 1, Lake Verrett area, 11-14s-12e, woc 2495 ft.

ST. MARY PARISH — Shell's Barbour 1, Glenwild area, 21-15s-12e, dr shale 9682 ft. Texas Co.'s State 1, Bateman Lake area, 21-16s-12e, comp. 10,905 ft, 350 bbls daily.

TERREBONNE PARISH—Fohs and Delarge Oil Co.'s Buckley 1, Dulac area, 77-19s-17e, driving piling. Same operator's State 1, Lirette area, 41-19s-19e, dredging canal.

MICHIGAN

ALLEGAN COUNTY—Frank Vahue's Chadbourn 1, 28-2n-13w, sd 1305 ft. Lenoran Pet. Co.'s Deledowski 1, 22-4n-12w, rig. Eureka Co.'s Widenfeller 1, 29-4n-12w, lcn. Robert Lentz's Hitzler 1, 34-4n-12w, dr 1500 ft. Adrian Stellar's Schafer 1, 29-3n-12w, mim. S. B. Hood's Wright 1, 9-3n-13w, sd 1275 ft. Huges Heinig's Lundburg 1, 29-3n-14w, dr 500 ft.

ARENAC COUNTY—B. A. Bartlett's Rembisz 1, 35-19n-3e, sd 2046 ft. R. L. Hill's Reinhart 1, 25-19n-5e, dr 100 ft. Sterling Drilling Co.'s Kline 1, 19-19n-4e, mim. R. B. Tamblyn's McFarlan's 1, 34-20n-4e, mim. D. F. Jones' Sibley 1, 33-20n-7e, sd 2400 ft.

BARRY COUNTY—Collin & Soper's Simmons 1, sw nw nw 3-4n-10w, lcn.

BAY COUNTY—Leonard & Olympia Oil Co.'s Hossler 1, sw se ne 9-18n-3e, dr 200 ft. Gulf's Marston 1, 1-14n-4e, dr 1910 ft. Stork Oil Co.'s Century 1, 9-17n-3e, sd 3037 ft. Century Oil Co.'s Wilson 1, 27-17n-3e, dr 600 ft.

CALHOUN COUNTY — Mar-Cal Dev.'s Woods 1, 13-2s-6w, rig. Verona Crude Oil Co.'s Fruin 1, ne sw ne 29-2s-6w, mim.

CLARE COUNTY—Sun's Weldon 1, ne ne se 14-19n-3w, sd 3270 ft. James McKay's Fee 12, 24-18n-5w, r 1100-1530 ft. Big Basin Oil Co.'s Murphey 1, nw nw se 26-17n-3w, rig.

CRAWFORD COUNTY — Dome Oil Co.'s Lindgren 1, 33-25n-2w, csg 5 in 3187 ft.

GLADWIN COUNTY — Pollack-Gordon's Delbridge 1, 1-17n-2e, dr 3200 ft. Swanson Oil Co.'s Vantick 1, 30-17n-2e, rig. W. E. Ross, Tr.'s Kinyon 1, 18-18n-2e, sd 400 ft. Rex Oil Co.'s Auer 1, 22-18n-2e, dr 167 ft. Daily Crude Oil Co.'s Caplan 1, 10-19n-1e, dr 400 ft.

GRATIOT COUNTY — Bliss & Redman's Martin 1, 26-10n-3w, dr 1400 ft. Henry Kritzman's Nickert 1, 33-11n-4w, rig.

HURON COUNTY — L. D. Hendershot's Klamp 1, 1-17n-14e, sd 2029 ft. C. W. Teater's Martin 1, 15-15n-11e, Dundee 2752 ft, sd 2860 ft.

IONIA COUNTY—Rex Oil Co.'s Marion 1, 11-8n-5w, dr 1300 ft.

ISABELLA COUNTY—Cryden & Rowmor's Smith 1, 35-15n-5w, dr 2200 ft. J. Golden Zabel's Kennedy 1, 25-14n-4w, dr 600 ft.

KENT COUNTY—Hirzel-Leland's Ouderman 1, 29-5n-12w, dr 1075 ft.

MECOSTA COUNTY—Sun's Robart 1, 29-16n-7w, sd 1100 ft. Jetter Drlg Co.'s Deakins 1, se ne ne 28-13n-7w, dr 210 ft. Frank Hebard's Weeks 1, 32-15n-7w, sd 600 ft.

MIDLAND COUNTY — Sun's Consumers Power 1, ne ne ne 9-16n-1w, br. Chapman & Associated's State 1, 27-16n-1w, dr 390 ft. C. W. Teater's Tushingham 1, sw ne sw 26-16n-2w, lcn. Daily Crude Oil Co.'s State 1, 29-15n-2e, Dundee 3656, so-sd 3871 ft.

ROSCOMMON COUNTY—Maynard Smith's Eggleston 1, 32-21n-2w, sd 1835 ft.

SAGINAW COUNTY—Bridgeport Oil Co.'s Tobias 1, 35-11n-5e, dr 2580 ft. Weber Oil Co.'s Uehler 1, 9-11n-6e, dr 2240 ft. Darke Bros.' Rockwell 1, 5-11n-3e, r-8 in 1028. Hogan Incl's Price 1, 2-11n-1e, sd 2125 ft.

WEXFORD COUNTY—C. H. Schrack's Fee 1, 17-22n-9w, dr 830 ft.

MISSISSIPPI

CLAIBORNE COUNTY—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11n-2e, 10-in csg 200 ft, top Vicksburg 675 ft, top Jackson 935 ft, top Cockfield 1346 ft, dr 1455 ft brown shale, strks sand and pyrites.

GEORGE COUNTY—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, sd.

HARRISON COUNTY—G. A. Hesse et al's Hingen 1, c ne 12-7s-10w, elev 69 ft, sd 2700 ft.

HINDS COUNTY—Black River Oil Co.'s Federal Land Bank 1, ne ne 11-15n-5e, cemtd 12½-in csg 730 ft, dr 4052 ft. Cleve Love et al's S. F. Johnson 1, ne se 29-6n-1w, spd woc 10 in csg 93 ft.

KEMPER COUNTY—R. A. Keaton et al's Buckwalter Lbr. Co. 1, nec 6-10n-14e, dk blown down.

LAMAR COUNTY—Sun Oil Co. et al's Mrs. Kate Talley 4, se nw 33-4n-15w, elev 374 ft, dr 7392 ft. Southern Miss. Pet. Co.'s (formerly carried South Miss. Oil Co.), Morris 1, se ¼ 4-2n-14w, arr deepn, td 50 ft.

PERRY COUNTY—Phillips Pet. Co.'s J. J. Newman Lbr. Co. 1, se se sw 21-2n-10w, elev 210 ft, dr 4310 ft, green sand.

SIMPSON COUNTY—Goodwill O&G Co.'s Berry 1, 33-2n-4e, sd 365 ft sand.

WILKINSON COUNTY—A. B. Taylor et al's Foster Creek Lbr. Co. 2, nwc 32-4n-2w, 16-in csg 65 ft, 10¾ in csg 697 ft, dry abn, td 3824 ft.

YALABOUSHA COUNTY—Acme Holding Co.'s S. D. Boyle 1, nw nw 33-25s-7e, elev 285 ft, sd 205 ft. Skuna Dev. Co.'s Mrs. T. A. Turner 1, se sw ne 25-25n-6e, temp abn, td 925 ft.

MONTANA

FERGUS COUNTY — Flathead Lewistown Oil Co.'s Carl Parks 1, cne ne 13-15n-18e, sd 1500 ft. East Crest Oil Co.'s Test 1, se sw 14-15n-19e, dr 640 ft. Whitetop Oil Co.'s Test 1, cne sw 35-14n-19e, dr 1450 ft. Baughm & Singley's Skaggs 1, cne se 7-15n-20e, dr 400 ft.

LEWIS & CLARK COUNTY—Wm. Janlon's Durnin 1, nw nw sw 17-18n-5w, dr 1190 ft.

YELLOWSTONE COUNTY—Broadview Oil Co.'s Halbritter 1, ne ne sw 18-3n-23e, dr 4121 ft.

NEBRASKA

JEFFERSON COUNTY—L. R. Page et al's Bonham 1, cse se 31-1n-1e, dr 3283 ft.

RICHARDSON COUNTY—Arab Pet. Corp. et al's Ogle 1, se se se 9-1n-14e, td 3423 ft in granite.

OKLAHOMA

ADAIR COUNTY—B. L. Maddox's Penn Mutual 1, cs¼ ne nw 5-16n-24e, dr 260 ft.

ATOKA COUNTY—C. M. Sheldon & Gardner Pet. Co.'s Lee 1, ne nw sw 2-4s-10e, dr 1898 ft, hf salt wtr.

BECKHAM COUNTY—Mid-American Oil Co.'s Biscoe 1-A, sw sw sw 28-8n-22w, dr 2300 ft.

BRYAN COUNTY — Southern Oil Co.'s Henry 1, cnw ne 10-8s-7e, der.

CADDO COUNTY—I.T.I.O. Co.'s Dome-Bo 1, cne se 29-6n-10w, dr 6540 ft.

CARTER COUNTY—Lloyd & Noble's Revelle 1, sw sw se 21-3s-2w, td 4028 ft, sdo.

CLEVELAND COUNTY—Harper & Turner's Pollock 1, cw½ nw nw 13-9n-2w, fsg 6850 ft. H. R. Hollenback et al's Mantooth 1, nw nw nw 24-6n-1e, dg cel & pits. W. A. Delaney et al's Bugher 1, se se sw 12-7n-2w, br.

CHOCTAW COUNTY—V. K. Chapman & Lowe's Hallum 1, nw nw ne 4-7s-20e, td 260 ft, run 10 in csg. J. A. True's Boby 1, nw se nw nw 17-7s-19e, dr 1765 ft.

COAL COUNTY—Phillips' Beck 1, se sw sw 6-1n-9e, td 5643 ft, d & a. Carter Oil Co. et al's Claytor 1, cw½ ne sw 27-2n-9e, pb 6480 ft, swabbing.

COMANCHE COUNTY—J. W. Wolfe's Costinus 1, sw sw se 30-4n-11w, spd. Frank Scott's Kuntz 1-A, se ne se 27-4n-11w, sd 2800 ft.

COTTON COUNTY—Bowers & Wise's Pendergraft 1, nw se sw 4-4s-12w, sd for rot tools.

CREEK COUNTY—M. W. Mosier et al's Holcomb 1, se sw ne 19-18n-8e, 2000 ft wih & sso, sd.

GARFIELD COUNTY—H. R. Hollenback et al's Clark 1, nw nw nw 34-21n-6w, dr 6440 ft.

GARVIN COUNTY—B.C.D. Edwards' Clark 1, ne ne ne 16-3n-3e, td 2676 ft, recemented.

GRADY COUNTY—Gulf's Thomas 1, sw nw nw 14-4n-5w, dr 9449 ft. Doyle Pet. Co.'s Huffine 1, nw nw se 30-5n-8w, der.

GRANT COUNTY—Magnolia's Reynolds 1, ne ne se 19-25n-5w, fsg 5480 ft.

GREER COUNTY—J. I. Medlin et al's Broadie 1, nw nw nw 5-6n-20w, sd 90 ft. R. W. McDonald's Fite 1, se se nw 34-7n-21w, cel. Gauntt & Baker's Parks 1, nw nw sw 29-7n-20w, dr 90 ft.

HUGHES COUNTY—Phillips' Becker 1, ne nw sw 8-5n-10e, dr 5480 ft. Pure's Rogers 1, se se ne 18-8n-12e, td 5054 ft, pb 3619 ft, dr plugs, show sw. Homer Doup et al's Bank 1, ne ne nw 7-7n-9e, rust & sd. Kenneth Ellison et al's Metro Life 1, cne ne 14-7n-9e, dr 2830 ft.

JEFFERSON COUNTY—Massad and Swa nsberger's Barrett 1, ne se se 14-6s-6w, sd 1890 ft. H. W. Weir et al's Hayes 1, se se nw 23-7s-7w, der.

JOHNSTON COUNTY—Patton et al's McCrummens 1, sw sw ne 16-1s-6e, sd 1380 ft. W. T. Shelton's Chapman 1, cnw nw 26-4s-6e, td 2510 ft, dr by fish.

KAY COUNTY—Fortuna Oil Co.'s Harris 1, sw sw ne 14-25n-1e, sd 282 ft. E. J. Shaffer et al's McKee 1, ne ne nw 20-28n-1w, sd 2500 ft. E. W. Jones etal's Dorse 1, se sw nw 25-26n-1n, abn 4267 ft. F. S. Freeland et al's Watson 1-A, ne nw nw 28-28n-1w, dgng cel & rog. E. J. Shaffer et al's Rudolph 1, ne ne sw 27-29n-1w, cel. Clark C. Nye's Willin 1, se se sw 24-27n-4e, c & p. Helmerich & Payne's Scott 1, se se ne 20-28n-1w, dr 1140 ft.

KIOWA COUNTY—Hughes & Reese's Fultz 1, se se se 10-6n-18w, dr 1238 ft.

LINCOLN COUNTY—C. L. Carlock et al's Young 1, cn½ nw nw 23-15n-5e, abn 4512 ft.

LOGAN COUNTY—Anthony & Marshall's Fruin-Eckman 1, se se sw 4-16n-1e, so & g, sd 5181 ft. Texas Co.'s Roper 1, cw¼ sw se 22-15n-1e, td 5542 ft, sdo.

LOVE COUNTY—Sinclair Prairie's Peabody Seating Co. 1, ne ne ne 35-6s-2w, lcn.

MAJOR COUNTY—Ed Parsons' Patzkowsky 1, cnw½ 10-20n-11w, rig.

MURRAY COUNTY—O. O. Owens' Gryer 1, ne se ne 34-1s-3e, dr 2685 ft.

MUSKOGEE COUNTY—F. E. Cusack's Elliott 1, cnl nw sw 20-15n-20e, rog. Cusack's Fee 1, ne sw se 20-15n-20e, spd 65 ft.

OKFUSKEE COUNTY—Mid-Continent's Inland 1, sw ne sw 10-13n-10e, rig.

OKLAHOMA COUNTY—W. O. Allen et al's Weaver 1, ce½ se nw 6-14n-3w, rur.

OKMULGEE COUNTY—Phillips' Wood 1, nw sw sw 31-11n-13e, dr 2837 ft.

PAYNE COUNTY—Stanolind & Amerada's Bennett 1, nw se ne 31-19n-4e, abn 4285 ft. Mid-Continent et al's Ramsey 1, sw sw nw 18-18n-2e, sd to run csg & test. Sagamore Drlg. Co.'s Moore 1, se sw nw 17-18n-1e, rig.

PITTSBURG COUNTY—Okla. Dist. Oil Co.'s Beeler 1, ne ne sw 7-7n-14e, abn 6200 ft. Phillips' Gilcrease 1, nw nw se 16-7n-12e, abn 5760 ft.

PONTOTOC COUNTY—Union Dev. Co.'s Abbott 1, sw nw ne 34-3n-6e, sd 3320 ft. H. W. Lee's Weatherly 1, nw se nw 24-1n-7e, rig. Riddle et al's Fee 1, nw sw se 11-3n-5e, sd 1520 ft.

ROGER MILLS COUNTY—Central Pet. Corp.'s Lambe 1, se se se 27-14n-21w, rig corners & sd.

SEMINOLE COUNTY—J. F. Root's Cone 1, nw ne sw 11-7n-5e, c & p. H. V. Woodson & Marydun Oil Co.'s Gilliland 1, se se sw 24-11n-7e, sd 3713 ft.

STEPHENS COUNTY — Coline Oil Co.'s Johnson 1, sw se ne 1-2n-8w, fsg stuck liner. Ed Parsons et al's Blake 1, csw nw 22-2n-8w, P. 40 bbls oil, comp. Clark & Cowden's Simpson 10, ne se ne 11-1n-5w, woc 4170 ft. Chas. Newsom's Pfile 1, sw sw sw 1-2s-7w, td 3551 ft, co 930 ft.

TEXAS COUNTY—Hagey et al's Peck 1, cne¼ 6-1n-13ecm, td 2842 ft, wtr broke in, to cem off.

TILLMAN COUNTY—Tom Walker's Bowman 1, sw sw nw 10-4s-17w, sd 200 ft. Caven et al's Southerland 1, sw sw nw 35-4s-16w, sd 44 ft. Smith's Hammel 2, ne nw nw 6-5s-15w, dr 1000 ft.

WASHITA COUNTY—L. B. McWhirter et al's Fee 1, nw sw sw 34-8n-19w, sd 1910 ft.

EAST TEXAS BORDER COUNTIES

CASS COUNTY—V. A. Hughes & Co.'s Lyster 1, Wm. Bateman sur, sd 1913 ft.

HARRISON COUNTY—Ark. Fuel Oil Co.'s C. M. Abney 1, Eason Little sur, elev 278 ft, blew out est. 30 mil ft day at 4820 ft (Hill sand), arr kill and dd. Eastern Shrevetex Oil Co.'s Mable George 1, J. S. Powell sur, pumping, est. 50 bbls day, wo gauge, td 2505 ft.

PANOLA COUNTY—Magnolia's E. A. Hull 2, Thos. Applewhite sur, elev 222 ft, top Travis Peak 6024 ft, top lower Marine 8078 ft, pb to 5950 ft, perf csg 5910-36 ft, gauged 6,445,000 ft gas, old td 8718 ft. C. K. Crews' J. C. Graves 1, McGowan sur, dr 2528 ft. Preston et al's (formerly Edwards Drl. Co.), Rushing 1, Mannan Smith sur, owdd, td 2950 ft.

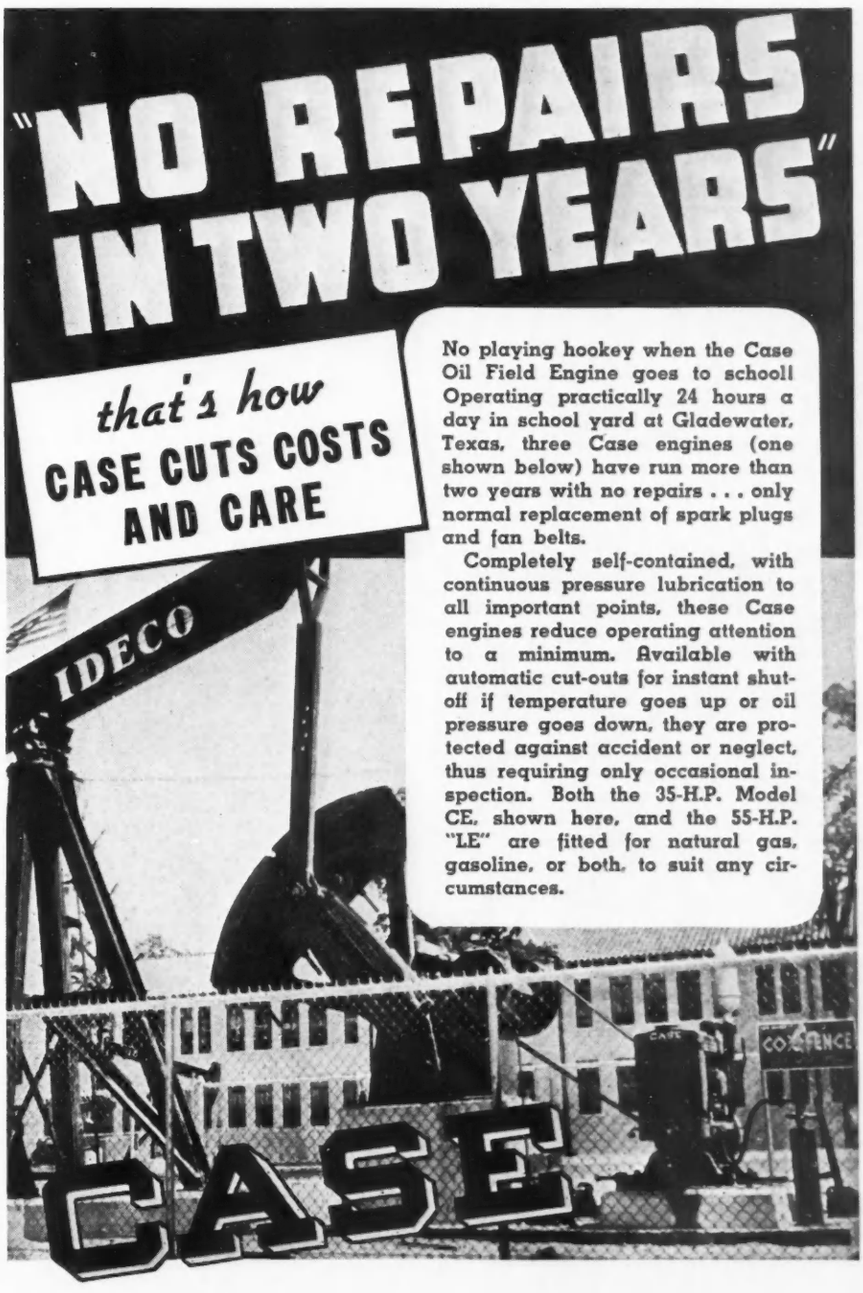
WEST TEXAS

(This report confined to south and east portion of the Permian basin and all Ordovician and Delaware projects.)

BREWSTER COUNTY—Floyd C. Dodson-B. A. Duffey et al's Texas American Synd. 1-A near c ne ne GH&SA sec 66, blk 10, elev 4228 ft, top Delaware shale 2297 ft, top Simpson 5980 ft, dr 6450 ft. G. H. Storey et al's J. P. Wilson 1, c se nw of T. & St. L. sec 3, blk 212, elev 3609 ft, sd 2545 ft.

CRANE COUNTY—J. W. Hampton et al's Thaxton 1, W. L. Wilkinson sur, sd 1300 ft. Gulf's M. B. McKnight 3, near ne sw ne PSL sec 9, blk B-21, elev 2693 ft, top Simpson or middle Ordovician 6079 ft, coring 6093 ft; W. N. Waddell et al 7, c sw se PSL sec 4, blk B-27, Ordovician test, elev 2537 ft, rig. Loffland Bros. Co.'s Reidland 1, sec of PSL sec 2, blk B-27, Ordovician test, elev 2570 ft, fsh 5434 ft. H. F. Wilcox O&G Co.'s M. B. McKnight 1, c se nw of G&MMB&A sec 9, blk 46, elev 2773 ft, Ordovician test, top Yates 2380 ft, dr lime 6885 ft

COKE COUNTY—Barnett Pet. Corp.'s J. E. Mims 1, sec T&P sec 39, blk W, elev 2352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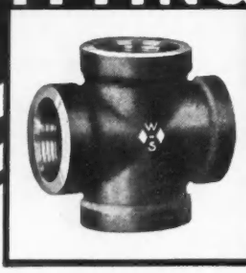

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ft, dr 1500 ft. H. E. Ogden et al's E. C. Rawlings 1, swc of H&TC Ry. sec 391, blk 1-A, dr 610 ft.

CROCKETT COUNTY — Moore Bros. Corp.'s Paul Perner 1, c nw I&GN sec 37, blk 2, elev 2560 ft, top lime 1600 ft, co to dd from 8002 ft. H. A. Ringle et al's A. C. Hoover 2, sw se nw GC&SF sec 14, blk 1, elev 2368 ft, hfw 1840-75 ft, sd 1892 ft. J. N. Simpson et al (was Magnolia's) A. C. Hoover 2, near ne ne se of B&B sec 2, blk FF, A-4500, elev 2521 ft, top salt 865 ft, top lime 1850 ft, lime pay 2038-58 ft, td 2067 ft, used 100 gals acid, testing. Stewart & Cormas' A. C. Hoover 1, c nw se of B&B Ry. 1, blk FF, elev 2380 ft, top salt 475 ft, top lime 1747 ft, sd with 1400 ft oih, td 1923 ft.

CULBERSON COUNTY—Ross Brewer, Collins et al's C. M. Caldwell 1, sw¼ of PSL sec 14, blk 42, Delaware test, elev 3819 ft, top black lime 1880 ft, sd for cas in sul w 1885-89 ft. Jarrell, Earl Bell & Harrison's C. M. Caldwell 1, c sw of PSL sec 15, blk 109, Delaware test, sd 151 ft.

JEFF DAVIS COUNTY — H. F. Wilcox O&G Co.'s Jones-Coffield 1, nec of H&TC sec 121, blk 4, sd in shale 3500 ft.

ECTOR COUNTY—J. D. Bodkins et al's W. P. Edwards 1, sw sw se T&P sec 37, blk 43, T-3-S, elev 2953 ft, top anhydrite 1842 ft, top salt 1860 ft, dr 4070 ft.

EL PASO COUNTY—Tri-State Oil Co.'s Chas. & L. M. Kinkel 1, ne ne ne sec 237, S. F. No. 7232, testing show oil 3436 ft.

FISHER COUNTY—Bond Oil Corp.'s Bertram 1, sec sw labor 43, league 323, Bastrop C. S. L. sur, elev 1852 ft, base Sedwick 2764 ft, top Dothan 2800 ft, top Noodle Creek 2900 ft, ur 2901 ft.

TOM GREEN COUNTY—Humble's Lewis-Wardlaw 1, near c ne se H&TC sec 5, blk 17, Ordovician test, elev 2142 ft, San Angelo lime 340 to 630 ft, fsh 3811 ft.

GLASSCOCK COUNTY—O. B. Greathouse et al's Burns 1, sw W&NW sec 211, blk 29, lcn.

HOWARD COUNTY—H. L. Lockhart et al's Scott 1, sec W&NW sec 67, blk 29, rig. W. F. McDermott et al's S. B. Capps-Anderson 1, swc T&P sec 18, blk 29, T-1-N, water sand 2575-80 ft, dr 2710 ft. Roy A. Westbrook et al's Great West Ref. Co. 1, near nec T&P sec 48, blk 32, T-1-N, elev 2469 ft, gauged 368,000,000 ft of nitrogen and oxygen at 1460 ft, prod. declined and cased off, fs 3182 ft.

HUDSPETH COUNTY—Haymon Krupp Oil & Land Co.'s K. S. Briggs 1, nwc T&P sec 24, blk 73, Tsp. 7, dr 2330 ft; S. J. Thaxton 1, near sec ne se T&P sec 34, blk 74, Tsp. 6, ur 7-in cas, td 3448 ft.

LOVING COUNTY—Barnett Pet. Corp.'s W. D. Johnson 1-A, sec ne T.P. sec 12, blk 56, Tsp. 1, elev 3044 ft, top Delaware lime 3675 ft, top sand 3704 ft, shot 170 qts 3678-3728 ft, testing. Michigan O&G Co.'s M. Kyle 5, ne ne se T&P sec 20, blk 55, Tsp. 1, lcn; M. Kyle 6, nw se ne sec 20, shot 280 qts 3901-70 ft, testing; Kyle 7, cem 10-in 1330 ft. Woodley Pet. Co.'s TP Land Trust 1-A, nwc n½ s½ T&P sec 21, blk 55, Tsp. 1, td 3963 ft, pumped 10 bbls oil, 3 bbls water.

MENARD COUNTY—G. A. Clements et al's A. H. Murchison 1, swc sec 80, ur 310 ft. C. D. Hagerty et al's Callan 1, swc e½ J. M. Franz sur, sec 36, machine.

MITCHELL COUNTY—Standard's (Texas) W. L. Foster 1, lse. 6, nw se nw T&P sec 44, blk 29, T-1-N, cem sur cas.

NOLAN COUNTY — Marland-Drake Drl. Co.'s E. W. Withers 1, c sw T&P sec 65, blk 21, lcn.

PECOS COUNTY—Mike L. Benedum et al's J. C. Trees 1, sw sw sw H&GN sec 9, blk 8, Ordovician test, elev 2528 ft, top Delaware lime 4808 ft, top sand 4862 ft, sd in sul w 4862-4995 ft. Aero Gas Ref. Co.'s Johnson-Skelly 1-a, n½ sec 40, H&GN sur, blk 8, top lime 2150 ft, dr 2345 ft. J. J. Dorr et al's Payton 2, nw part of H&GN R. sec 99, blk 8, machine. Ed. Falvey et al's Joe C. Trees 1, nwc H&GN sec 63, blk 8, dr 1595 ft. D. W. Francis et al's Westerman-Haggen 1-A, nwc 186-ac lse, Rubian Phares sur, blk 166, elev 3155 ft, est 3,000,000 ft dry sweet gas, sd 2942 ft. L. B. Hoss & F. J. Downey's H. Cordez-Empire 1, nec of H&GN sec 81, blk 8, elev 2433 ft, top lime 1858 ft, broken pay 1975-2044 ft, flows 50 bbls daily by heads. Magnolia et al's J. H. McKee 1-a, near nw nw sw H&GN sec 24, blk 9, elev 2385 ft, (jkd twice), top Simpson 4775 ft, co to dd from 4928 ft. Thompson & E. R. Minshall's Michaelson 1, c nw nw T&St. L. sec 24, blk 146, elev 3023 ft, flows 50 bbls sul w per hr, dr 2045 ft. Stanley A. Thompson et al's Elsinore Cattle Co. 1, se GC&SF sec 53, blk D, Ordovician test, elev 3938 ft, dr limey-shale 6670 ft. Trans-Pecos Oil Co.'s F. M. Gallaher 1, ne ne nw T&P sec 9, blk 51, Tsp. 10, sd 1620 ft; Popham Land & Cattle Co. 1-B, s½ GH&SA sec 235, blk 11 (3rd hole), sd 1540 ft. H. F. Wilcox O&G Co.'s Cerf 1, near c ne sw of T.&St. L. sec 27, blk 130, cem sur cas.

PRESIDIO COUNTY—Brite Prod. Co.'s L. C. Brite 1, ne GH&SA sec 113, blk 12, tested 2½ bbls oil daily at 4267-75 ft, lost hole, dr new hole 3605 ft.

REEVES COUNTY—Barnett Pet. Corp.-J. C. Hill & Conoco's Ely-Healy 1, c nw PSL sec 38, blk 71, Delaware test, elev 3166 ft, dr 3040 ft. Grisham-Hunter Corp.'s T. P. Land Trust 1, ne T&P sec 40, blk 58, Tsp. 6, lcn. C. R. Mallison-Sid W. Richardson et al's Eliza M. Brown 1, near c sw H&GN sec 62, blk 4, dk. Ohio's Popham Land & Cattle Co. 1, nw T&P sec 18, blk 54, Tsp. 10, rig.

RUNNELS COUNTY — H. C. Hantho & Sherman Nelson's Bert Fletcher 1, E. C. Good sur No. 58½, elev 1769 ft, top Palo Pinto lime 4030 ft, top Strawn 4220 ft, so&g with w at 4384 ft, pb to 4360 ft, gun-perforated pipe, used 10,000 gals acid, tested water. Homer Price & A. E. Koener's J. C. Beddo 1, sub-div. No. 51, D. Diaz sur, sd 2800 ft.

SCHLEICHER COUNTY—John M. Cooper et al's Bert Page 2, c ne se GH&SA sec 40, blk L, elev 2289 ft, Ordovician test, dr 4870 ft. Tex-Tor Oil Corp.'s Judkins-Spencer 1, c sw of A. & B. sec 33, blk A, elev 2235 ft, Ordovician test, salt w 5142-81 ft, cased off, dr 5230 ft.

SCURRY COUNTY—Robinson Drlg. Co.'s A. C. Martin 1, c nw sw H&TC sec 147, blk 97, elev 2234 ft, top lime 1514 ft, td 3515 ft, pb to 2590 ft, testing. T. G. Shaw Oil Corp.'s First Nat'l Bank (Ft. Worth) 1, c nw H&TC sec 112, blk 97, elev 2214 ft, top lime 1568 ft, dr 2615 ft.

STONEWALL COUNTY—Gen'l Crude Oil Co.'s J. D. Smith 1, sec H&TC sec 371, blk 2, 13 mi n Rotan, rig.

SUTTON COUNTY—Ordovician Oil Co.'s J. T. Evans 1, nec sec 1, blk V-26, Lucy Stubblefield sur, elev 2126 ft, top Canyon, trace o&g, 2320 ft, top Strawn, with oil odor in water, 2860 ft, top Bend lime 3198 or 3315 ft, salt w 3750-75 ft, ur 7-in cas, td 3790 ft.

TERRELL COUNTY—R. A. Basurto et al's J. H. Phelps-Bates 1, near sec nw sec 5, G. W. Turley sur A-4, Ordovician test, elev 2185 ft, sd 5600 ft. D. & S. Oil Co.'s Sam Bell 1, near swc ne sw of E. L. & RR sec 68, blk D-7, sd 345 ft.

UPTON COUNTY—W. D. Riser et al's King 1, nwc n½ MK&T sec 8, blk 3, rig.

WARD COUNTY—Bahan, Rhodes & Tompkins' H. A. Spencer 1, H&TC sec 41, blk 34, elev 2610 ft, sd 405 ft. M. J. Delaney, Inc.'s J. E. Cooper 1, H&TC Ry. sec 43, blk 34, elev 2558 ft, top anhydrite 1260 ft, dr 2510 ft. L. B. Hoss & F. J. Downey's R. Avery-Atlantic 1, H&TC sec 36, blk 1, elev 2407 ft, dr 480 ft; Viola Meyers 1, sw-80-ac H&TC sec 17, blk 32, sp and sd. Magnolia's Sealy 2-46, ne sw ne G&MMB&A sec 46, blk F, Rustler lime 1725-45 ft, fsh 2154 ft. R. G. Patillo et al's Blair-Republic 1, n cor H&TC sec 5, blk 32, dr 480 ft. Schkade & Patillo's Dorr 1, near sec H&TC sec 35, blk 1, elev 2405 ft, dr 1050 ft. Frank T. Pickrell, Jean E. FitzPatrick, Dodson et al's H. B. Carr 1, c w¼ of n¼ H&TC sec 125, blk 34, Delaware test, mim; F. I. Dyer 1, w¼ of n¼ H&TC sec 135, blk 34, Delaware test, cem sur cas.

SOUTH TEXAS

SAN ANTONIO DISTRICT

ATASCOSA COUNTY—Stieren's Crawford 1, Crawford sur, dr 3750 ft.

BASTROP COUNTY—Bibb's Lentz 1, Wilkinson sur, sd 2550 ft. Southern Cross' Smith 1, Blalock sur, set sur csg, dr ahead.

BEXAR COUNTY—Fair's Medina Irr. Farm 1, blk 55, sp. Hickok & Reynold's Ewert 1, York sur, sd 335 ft. Rosenburg's Sarle 1, Rolen sur, sd 245 ft, wor.

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Jackson 1, Morris sur, sd 2350 ft. Mac-Wag-Tree's Roberts 1, House sur, dr 2000 ft. McNeill et al's Marino 2, Allen sur, sd 2060 ft.

DIMMITT COUNTY—Teas & Maryland's McKnight 1, I & GN RR sur, dr 5525 ft.

EDWARDS COUNTY—Auld et al's Henderson 1, sec 46, dr 2075 ft. Carter's Sweeten 1, GC & SF sur, sd 5112 ft. Evans & Love's Brown 1, sec. 66, dr 4125 ft.

GUADALUPE COUNTY—Blanco & Buchanan's Howell 1, Darst sur, dr 3100 ft. Kallison's Burris 1, Nash sur, dr 2625 ft; Henry Ranft 1, Burnham sur, sd 1150 ft. Housel's Carter 2, Highsmith sur, sd 2315 ft. Kreiter & Douglas' Oliver 1, Smith sur, dr 2125 ft.

KENDALL COUNTY—Landon & Holifield's Sidenstricker 1, Rodriguez sur, dr 668 ft.

MEDINA COUNTY—Landon & Holifield's Sidensticker 1, Rodriguez sur, dr 668 ft.

TRAVIS COUNTY—LaShelle & Gardner's Giles 1, Sanders sur, sd 728 ft, for csg.

WILLIAMSON COUNTY—Aldridge's Kroschewsky 1, Parrass sur, lcn.

ZAVALA COUNTY—Wilcox Gilliam 2, sec 11, sd 3983 ft, 1000 ft sul/wtr in hole, will pb & test.

LAREDO DISTRICT

DUVAL COUNTY—Circle's Southland 1, sec 5, mim. Divre's Hagist 1, sec 265, ru. C. K. Gravis' Frederick 1, Gibson sur, sd 950 ft. Gillespie & Son's Hamilton 1, sec 85, dr wtr well. Frank Gravis' Vaello 1-A, San Andress gr, sd 6018 ft; Mergele 1, I. Broyless sur, dr wtr well. Magnolia's DCR C1, sur 61, coring 2450 ft; Lopez 1, sur 82, dr 3875 ft. Rudco's Ellis 1, sec 308, perf 2080-84 ft, test sw, recemented.

JIM HOGG COUNTY—Darby's Holbein 2-B, sec 7, perf 1820-24 ft, swabbing. French's Garza 7, sur 269, comp 1 mcf gas.

LA SALLE COUNTY—Reed's Yeager 1, sur 39, dr 1160 ft, corrected depth.

McMULLEN COUNTY — Mills Bennett's Nueces 2, sur 234, dr 350 ft. Coyle's Two Rivers Ranch 1, sec 60, stdg 740 ft. Cities Service's Morris 1, Perieda sur, prep to mim. Howell & Richardson's Martin 2, sec 7, dr 550 ft. Richardson & McCarthy's Martin 1, Weiting sur, sd 710 ft. Rowan & Nichols' Rhode 2, sur 21, r u.

STARR COUNTY—Calderonk's Calderoni, sh 58, por 80, dr 1480 ft. Collins & Co.'s Guerra 1, sh 6, coring 6435 ft. Lowe & Ely's Gonzales 1, sd 2325 ft.

WEBB COUNTY—Boysen & Jones Watkins 1, sec 20, set sur csg, wocs. Bridwell's Billings 1, sec 36, sp & sd. Jones' Saenz 1, sec 1065, testing snd 1921-27 ft. K'llam's Bruni 4, sec 585, coring 3370 ft. Magnolia's Sprague-Fee 3, sec 2161, coring below 1940 ft. Moore's Garcia & Villareal 1, sec 337, blowing gas & spraying oil 1907-47 ft. Mortimer's Welhausen (Frost) 1, sec 73, dr 2680 ft. Nessly's Bruni 3, sec 449, completing in snd 1790-1813, csg at 1804 ft.

ZAPATA COUNTY—Brown's Gutierrez 1, India gr, dr below 710 ft.

CORPUS CHRISTI DISTRICT

ARANSAS COUNTY—Atlantic's Porterfield 1-C, McCampbell subd, td 8889 ft, sd/tr & dr to 6887 ft, completing; Porterfield 30d, lot 6, blk 13, dr 7685 ft.

BEE COUNTY—Jones, Russell, & Booe's Ruhman 1, Thurston sur, lcn.

BROOKS COUNTY—Standard of Texas' Mestina 3, (lse 2) sh 11, dr plugs, 7 in at 2743 ft.

DeWITT COUNTY—Davis' Afflerbach 2, Criswell sur, r u.

GOLIAD COUNTY—Standard of Texas' Williams 1, Williams sur, dr 750 ft. Swiger's Wood 1-B, Shearn sur, td 5048 ft, perf 5009-14 ft still swabbing 3 bph, oil & mud, no sw.

HIDALGO COUNTY—Atlantic's McCalip 1, sec 175, sd 9105 ft. Y & B's Waite Bros 1, sh 382, coring 6320 ft.

JACKSON COUNTY—Magnolia's West 1, Musquiz sur, dr 3325 ft.

JIM WELLS COUNTY—Hill's Kuether 1, sur 235, re-dr 3271 ft. Howell's Talbert 1, La Vaca gr, stdg 5530 ft, may perf snd 4509-12 ft. Smith & Storey's McGill 2, sur 9, swabbing 2196 ft. Magnolia's Seeligson 8, Los Jaboncillos gr r u. Southern Minerals' Hawkins 1, sh 3, San Diego de Abajo gr, dr plugs.

KENEDY COUNTY—Sal Vieja's Gracia Land & Cattle 1, sh 59, dr 8820 ft.

KLEBERG COUNTY—Magnolia's Dietz 1, sec 7, dr 3185 ft. Pure's State of Texas 1, tr 522, prep to dredge canal. Superior's Koch 1, sec 26, dr 7160 ft.

LIVE OAK COUNTY—Bumpus & Barnett's Simmons 1, blk 42, ps. Chew & Hantho-Nelson's Bell 1, Parks sur, dr 2003 ft. Hannah's Wedding 1, Hughy sur, dr 2185 ft. H & H's Nichols 1, Henry sur, set sur csg. Holland's Alamo 2, Giminez sur, mim. Loma's Pfluger 1, Turner sur, dr 1325 ft; Striddle 1, Turner sur, r u. Martin's Great Southern Life, sec 25, sd 256 ft. Ranco's Fee 1, sur 3, dr 3790 ft.

NUECES COUNTY—Douglas McKinzie 1, sur 419, dr 5525 ft. Richardson's Chapman 1, sec 43, td 5424 ft, testing thru perf. Southern Mineral's King 4, sec 6, r u. Texon's Horne 1, Palo Alto gr, drk, wor; Sevier 3, Longoria gr, coring 7125 ft. Union's Galladay 1, Agua Dulce gr, coring 6575 ft; Simmonds 1, Agua Dulce gr, coring 7485 ft; Rivers 4-A, Palo Alto gr, lcn.

REFUGIO COUNTY—Continental's Scott 1, Reojas sur, lcn. Hogan's Kelly 1, Power sur, perf 5994-6002, test sw, recemented; Union's Power 9, Refugio townsite, dr plugs 8010 ft.

SAN PATRICIO COUNTY—Bob's Green 2, Williamson sur, sd 6195 ft. Conroe's Dougherty 1, McGloin sur, prep to re-dr 800 ft. Plymouth's Brigham 1, sec 62, dr 265 ft. Schwab's Lane 1, sec 12-A, dr 1750 ft.

VICTORIA COUNTY — Bowles' Robertson 1, Burnham sur, td 6318 ft, cored snd, 5100-12 ft in sd/tr hole, 5½ in at 5100 ft, wocs.

WILLACY COUNTY—Magnolia's Armendiaz 1, sh 4, re-dr 7145 ft.

TEXAS GULF COAST

BRAZORIA COUNTY — Pure's Smith 1, Peach Point area, S. F. Austin sur, sd 7710 ft.

CHAMBERS COUNTY—Ingot and Merit Oil Co.'s Wright 1, Cedar Bayou area, C. Smith sur, comp. 27 bbls daily 6392 ft. Salt Dome and Standard of Texas' State 1, in Galveston Bay, tract 178, ru.

FT. BEND COUNTY—Medford & Burke's Woods 1, s of Blue Ridge, Magnolia Place Subdivision, dr shale 3798 ft.

GRIMES COUNTY—Hubert & Holt's Greer 1, Carlos area, P. B. O'Connor sur, ru.

HARRIS COUNTY—Texas Gulf's Rath 1, Aldine area, M. Sevey sur, abn 7698 ft.

JEFFERSON COUNTY—G. H. McCarthy's Broussard Trust 1, Cheek area, C. Hillbrandt sur, running electrical logging device to 7732 ft. Shell's McFadd'n 1, McFaddin Ranch area, S. A. Pace sur, comp. 15 bbls per hour 5923 ft.

MATAGORDA COUNTY — Pierce Estate's Fee 1, n of Van Vleck, I&GN sur, dr shale 5550 ft. Sun's Robbins 1, n of Citrus Grove, C. H. Vandeveer sur, dr shale 8478 ft.

POLK COUNTY—National Standard's Carter Brothers 1, e of Leggett, M. S. Womack sur, abn 2960 ft. Stewart Oil Co.'s Galloway 1, se of Livingston, J. W. Ringold sur, abn 4250 ft.

TYLER COUNTY—Navarro Oil Co.'s Rice 1, Warren area, B. B. B. & C. sur, woc 1029 ft.

WHARTON COUNTY—Strake's Strunk 1, Lissie area, L. P. Jennings sur, dr shale 7805 ft.

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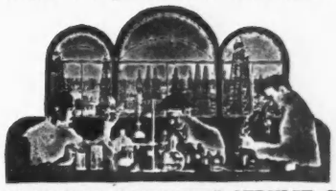
10 Sample Survey $50. Total Cost: Mid-West



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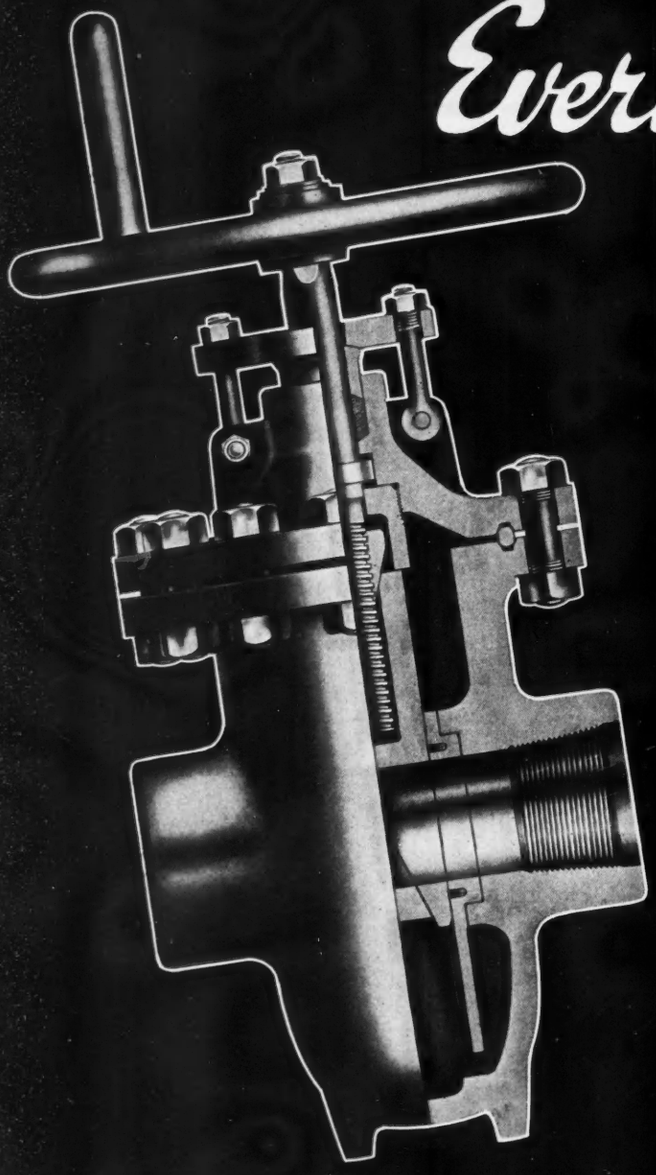
Every Working Part
MOVES IN A BATH OF GREASE



It's easy to see why the W-K-M Through-Conduit Lubricated Gate Valve whips the outstanding evil of valves . . . friction and corrosion. This valve body is itself a grease chamber, and every moving part is wholly submerged in a grease bath. The gate and segment are thoroughly lubricated at each operation. This means complete freedom from internal corrosion, and a minimum of friction. By the same token it means easy opening and closing at full rated pressure. Positive lubrication like this is one of the valuable features making it by far the most popular gate valve on the market.

THE 3" W-K-M GATE VALVE HOLDS THIS SIX LBS. OF GREASE

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NEW PRODUCTS FOR THE FIELD
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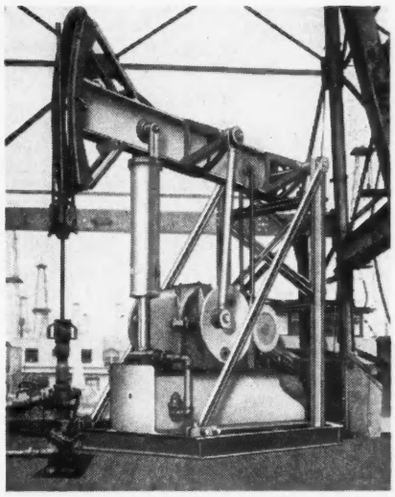
AIR BALANCE PUMPING UNIT
Reed Roller Bit Company

Reed Roller Bit Company, Houston, Texas, announces an air balance pumping unit, which utilizes the cushioning effect of compressed air to provide a smooth acting and efficient counterbalance. This method, being extremely flexible, eliminates whip in the rods and aids the prime mover in starting and accelerating the load, according to the manufacturer.



Reed Air Balanced Pumping Unit

The vibration of this unit is eliminated at high and low speeds, which reduces the liability of rod failures, providing efficient pump action and increasing rod life. The counterbalancing adjustments may be made while the unit is in operation and one man can respace the well. All counterweights are eliminated.

The compactness of the unit makes it easily portable by truck and permits it to be installed diagonally in one corner of the derrick floor, without an expensive foundation. The unit is fitted with roller-type bearings throughout, reducing friction to a minimum. All bearings are fitted with oil seal rings.

SAND BLAST GUN
Michiana Products Corporation

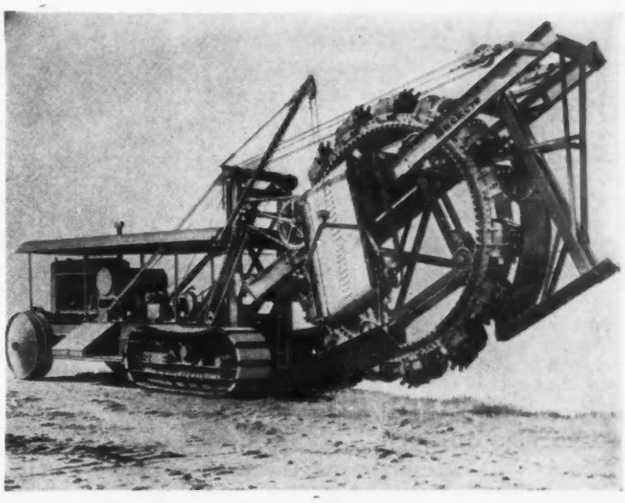
Michiana Products Corporation, Michigan City, Indiana, recently placed on the market a new sand blast gun, which, according to the manufacturer, incorporates features of design to provide better surfaces for painting and finishing wood and steel in much less time without injury to the surfaces of the materials.

This gun has a chamber in which the sand meets a baffle which sets up a whirling motion reducing the sand particles and increasing the number of cutting edges. Sand is delivered under pressure through a flattened orifice fitted with abrasive-resistant alloy steel lips. The result is a flat stream of sand expelled under uniform pressure. It is claimed that this design permits the use of lower cost sand—removes grime, grease, and old finishes faster, and reduces buckling to a minimum on light materials without cutting or pitting the surfaces.

DITCHER
The Buckeye Traction Ditcher Company

The Buckeye Traction Ditcher Company, Findlay, Ohio, announces a new, large size, wheel type ditcher with a capacity for digging trench from 21 to 42 inches wide and to 8 feet deep.

According to the manufacturer, this ditcher has an unusually large digging capacity, its range of trench widths



Buckeye Ditcher

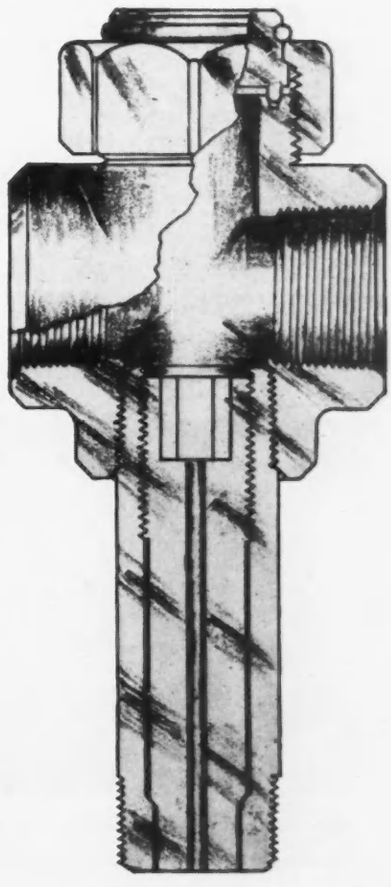
running from the moderate size trench of the average pipe line to the largest ordinarily required under any circumstances. Another feature which is expected to cut maintenance time and speed operation is the use of all transmission drives. All controls are grouped at the operator's platform and a change in speed for any operation is as easily made as shifting gears on an automobile.

The ample size of the Alligator traction wheels brings the bearing pressure down to less than 10 pounds per square inch.

FLOW FITTING
Oil Center Tool Company

Oil Center Tool Company, Houston, Texas, announces development of a new flow fitting, which is available in either cross or tee type and which was designed for use with any standard type choke that permits replacement of the bean through the flow fitting.

The fitting is provided with a special cap with swivel nut which replaces the conventional bull plug. A course, straight thread connection between the fitting and swivel nut prevents galling of the threads as is usually the case where the bean is changed constantly and a bull plug is used. A ring, machined integrally with the cap nut, effects a seal in a groove provided on the flow fitting.



This Week with the Industry's EQUIPMENT SUPPLIERS

Bridgeport Opens New Store At Wichita Falls, Texas

The Bridgeport Machine Company, Wichita, Kansas, has opened a new branch store at Sixth and Ohio Streets in Wichita Falls, Texas, which will be completely stocked and in operation soon after the first of the year. The new store will operate as a complete distributing branch, carrying the full line of the company's oil field equipment.

W. M. McClure, who has been with the company many years, is moving from Fort Worth to take charge of the branch, where day and night service will be maintained.

General Electric Company Elects Birge Vice President

General Electric Company, Schenectady, New York, has elected Nathan R. Birge, assistant to the president, as vice president. He will be located in Schenectady, where he has carried on his duties in the past. Birge entered the employ of General Electric in August 1900, following his graduation from Worchester Polytechnic Institute with the degree of B.S. in electrical engineering. In 1902 he was transferred to the former supply department of the company, later becoming manager of the street lighting section. He was named assistant manager of the supply department in 1923, and in November of that year was transferred to the executive department. He was made assistant to the president in July, 1927.

Briggs-Weaver Services Goodrich Company's Belts

Briggs-Weaver Machinery Company, Dallas, Texas, has furnished oil well and mill supplies to the Southwest for the past 41 years, and today this company, headed by Jack B. Dale, maintains a sales force of 23 men, a competent engineering department, large warehouse, and well equipped service shop.

Views of stock room and workshop of Briggs-Weaver Machinery Company at Dallas, where Goodrich trained mechanics splice endless belts by the Plylock method. The company carries complete stocks of Goodrich mechanical rubber goods.

As distributors for The B. F. Goodrich Company's line of mechanical rubber goods, the company has a complete belting department which enables it to give the promptest service possible. In addition to stocking a complete line of Goodrich belting, this department is also equipped to splice belts endless, either on the pulleys of the customer's machinery or in their own shop, by the patented Plylock method.

Texas Steel Company Reorganizes Oil Field Supply Department

Texas Steel Company, Fort Worth, Texas, announces that, effective January 1, 1938, its oil field supply department will be operated under a separate charter and under the name Texasteel Manufacturing Company. The new company has been organized to take over the plants, assets, and management of the oil well supply department of the Texas Steel Company, the capital stock being $300,000.

The new company will engage in the manufacture of the complete line of oil field pumping equipment at present manufactured by Texas Steel Company. This consists generally of all standard sizes and various types of high tensile and low metalloid electric steel sucker rods, electric steel pull rods, a complete line of double and single crank pumping units, and various other oil field equipment.

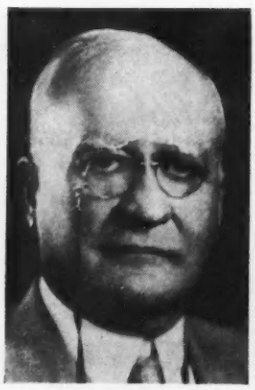
Texasteel Manufacturing Company has entered into a contract with Texas Steel Company for the purchase of all of its steel requirements except structurals. With the exception of this arrangement, the two companies will operate as entirely separate entities and under separate and distinct managements.

Officers of the new company are: Judge George W. Armstrong, president; A. J. Armstrong, vice president and general manager; George W. Armstrong, Jr.; Jess W. Emery, vice president and general sales manager, and John F. Foster, secretary-treasurer.

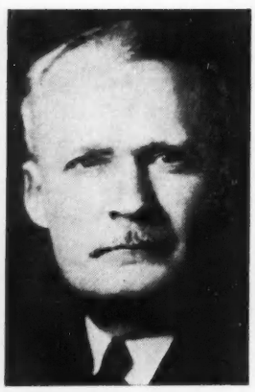
Judge George W. Armstrong is also president of Texas Steel Company, which he founded uper the name of the Texas Rolling Mill Company in 1907. He is a native of Texas and graduate of Texas University law school and has been active in financial and industrial affairs of this community and has contributed much during this period towards the industrial development of the state.

George W. Armstrong, Jr., is a graduate of Carnegie Institute of Tech-

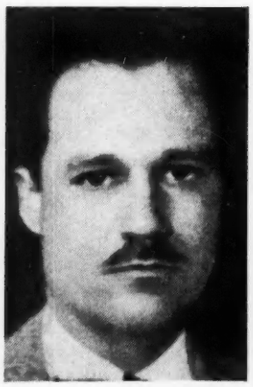
Officers of Newly Organized Texasteel Manufacturing Company



JUDGE GEORGE W. ARMSTRONG
President



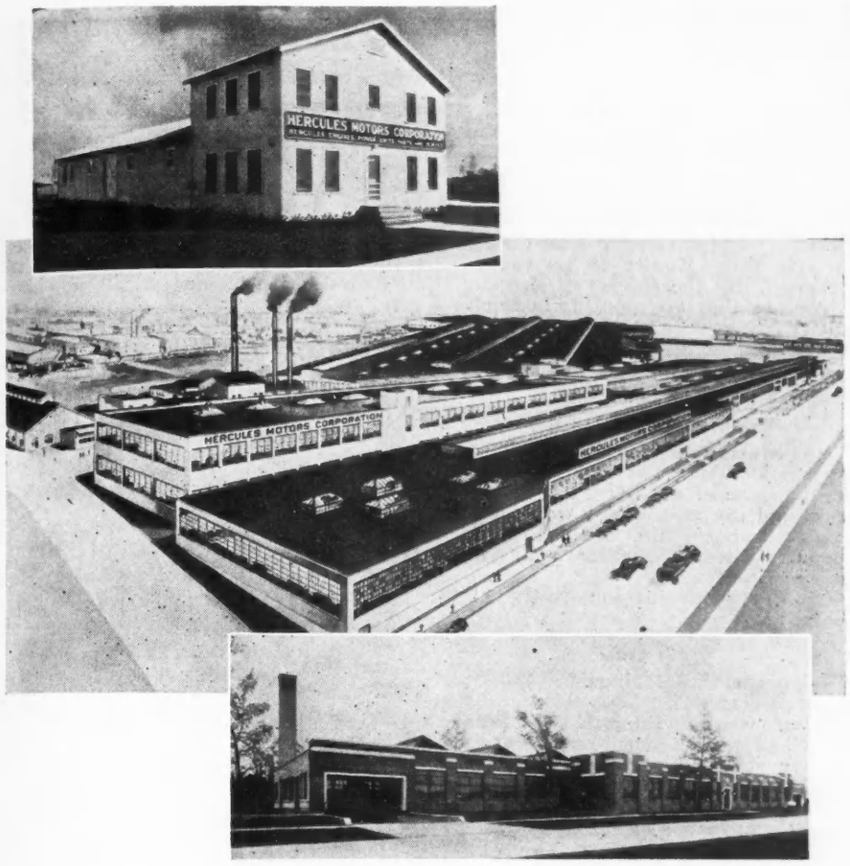
ALLEN J. ARMSTRONG
Vice President and General Manager



GEORGE W. ARMSTRONG, JR.
Vice President

JESS W. EMERY
Vice President and General Sales Manager

JOHN F. FOSTER
Secretary-Treasurer



The new Kilgore, Texas, branch store of the Hercules Motors Corporation shown at the top, is the first of a series of sales and service branches to be established in the Mid-Continent field. Manned by a staff of sales engineers and service men, the store carries a complete stock of Hercules engines, power units and parts. In the center is shown the main plant of the Hercules Motors Corporation at Canton, Ohio — the largest exclusive manufacturer of multi-cylinder, internal-combustion engines, both gasoline and Diesel, in the United States. At the bottom is the Hercules branch factory at Muskegon, Michigan.

nology, where he specialized in metallurgy. He was employed for several years in the Eastern steel mills and for the past 15 years has been actively associated with the Texas Steel Company, in which organization he has held the position of vice president and general manager since 1928.

A. J. Armstrong was educated at the University of Missouri and the Massachusetts Institute of Technology, and was for over 10 years secretary of the Association of Producers of Petroleum in Mexico and prior to that time was employed with Mexico Gulf Oil Company. He resigned his position in Mexico on August 1 last to take charge of the Texas Steel Company.

Jess W. Emery has for the past 20 years been engaged in the sale of oil well supplies, specializing in oil well pumping equipment. He has been associated with Texas Steel Company since 1932.

John F. Foster was employed in an executive capacity with the old Texas Rolling Mill Company from 1909 until 1926. He has been associated with the present organization for the past several years.

Hercules Motors Corporation Open First Branch in Oil Fields

As the initial step in a program of sales and service expansion in the Mid-Continent oil field, Hercules Motors Corporation has announced the opening of its first branch store at Kilgore, Texas.

Manned by a staff of Hercules-trained sales engineers and service mechanics, the new Kilgore store will carry a complete stock of engines, power units and replacement parts for the entire Hercules line which embraces a wide variety of gasoline and Diesel engines and power units.

Other stores placed at strategic points in the Mid-Continent oil field will be opened by the Canton, Ohio, firm in the near future.

All Mid-Continent sales and service activities will be under the direction of A. B. Wehling, who will have charge of the various branches including the Kilgore unit. Wehling's headquarters will be in Houston.

Lockett Named Export Manager for Oil Well

Charles L. Lockett has been made manager of the Export Division of Oil Well Supply Company, with headquarters in New York City. He succeeds George E. Niver, who has joined National Tube Company in Pittsburgh, Pennsylvania.

DON'T GIVE IT ANOTHER THOUGHT!

There are thousands of power plant operators who don't know the meaning of scale and corrosion troubles in boilers and engines. Their **scientific** treatment consists, simply, of pouring a **few ounces** of —

SAND BANUM

"The Entirely Different Boiler and Engine Treatment"

— in each boiler and engine from one to four times per month. **Then they forget about it:** regardless of the operating conditions or the nature of the water used!

They know from experience that scale or corrosion cannot form or remain in the presence of this pure colloidal concentrate — because its "mechanical" action holds all water impurities in suspension. The gigantic power plant or the "portable" boiler can enjoy this SIMPLIFIED SECURITY in any part of the oil fields — **Sand-Banum comes ready for use in 16-ounce cans.**

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HOW TO WIN DOLLARS AND INFLUENCE PRODUCTION

Oil wells like humans respond to proper treatment. When production is off because of junk, plugged perforations, or bad sand conditions, it's a cinch for The Cavins Hydraulic Suction Bailer and Fishing Tool to bring them back to par. There's no gambling with The Cavins, its down-right dependability, proved through many years, and thousands of tough jobs, makes it a safe bet for bailing, fishing and washing perforations. Where others failed The Cavins made good, because it's scientifically correct in principle and construction.

You can depend on The Cavins. It's a necessary tool in every rig.

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San Fernando, **Trinidad, B. W. I.**

Squeaks from the Bull Wheel

Sets the Example

Mummy had decided it was time to persuade little Monica to go to bed. "Be good, like the chickens," she said. "D'you see, they are going to bed quite early."

"Yes," replied Monica, "but the mummy hen goes at the same time as they do."

Confirmation Needed

"You are the most wonderful girl in the world. You are the object of my life, the hope of my hope, my inspiration and my ambition. I would fight dragons, conquer the world for you, I would give my life for you. Will you be mine?"

"Oh, Tommy, do you really like me?"

Both Off

"What are these things?"

"Pencil-erasers."

"I don't want anything that will erase a pencil—I want a pencil mark eraser."

"Have you lead pencils?"

"We haven't any lead pencils. We have wooden cylinders with graphite inside them. Will they do as well?"

Reflection of Life

'And this, I suppose, is one of those hideous caricatures you call modern art."

"Nope, that's just a mirror."

Force of Habit

Champ: What's my temperature, Doc?

Hundred and three.

What's the world's record?

Dark Philosophy

"Hi, there, you; didn't you tell me you never got tired?"

"Dat's right, boss, Ah allus stops an' rests befo' Ah gets tiahd."

Right Man for the Job

An inmate of a penitentiary was called into the warden's office.

"You were sent here, I believe, for writing a glowing prospectus for an oil company."

"Yes," said the prisoner, "I was a little optimistic."

"Well," went on the warden, "the governor wants a report on conditions in this prison. I've decided to have you write it."

Lullaby

First Jail Bird: "What are you in for?"

Second Jail Bird: "Rocking my wife to sleep."

First. J. B.: "But they can't put you in here for that."

Second J. B.: "But you ain't seen the size of them rocks."

Disappointing Gift

She—"Can you drive with one arm?"

He—"You bet I can."

She—"Have an apple."

Typical Male

"Did Jones take his bad luck like a man?"

"Exactly; he blamed it all on his wife."

Static

Husband (feeling a twinge in the back while he is tuning in the radio): "I believe I'm getting lumbago."

Wife: "What's the use, dear? You won't be able to understand a word they say."

Fair and Warmer

"Well, Bill," asked a neighbor. "Hear the boss has had a fever? How's his temperature today?"

The hired man scratched his head and decided not to commit himself.

"'Taint fer me to say," he finally replied. "He died last night."

Riddle

Two people happened to be walking along a road together. One was a young woman, the other a handsome farmer lad. The farmer lad was carrying a large kettle on his back, holding a chicken in one hand, a cane in the other, and leading a goat. They came to a dark ravine.

Said she: "I am afraid to walk here with you. You might try to kiss me."

Said he: "How could I, with all these things I'm carrying?"

Said she: "Well, you might stick the cane in the ground, tie the goat to it, and put the chicken under the kettle."

His Method

"You don't mean to tell me that you are going to pay $300 for a set of dishes for your wife?"

"You don't understand. If these were cheap dishes, I would have to do all the wiping."

Bliss

They walked along the beach, holding hands and laughing like two unsophisticated youths. Suddenly she turned to him and held open her arms. He drew her close to him, kissed her with all the first fires of passion. No one would have guessed they were married.

They were not.

Too Far

"Do any of your boy friends try to go too far when they take you out driving?"

"Yes, they drive too far; it wastes time."

No Bowes Amateur

"Lady, if you'll give us a nickel me little brother'll imitate a hen."

"You mean he can cackle like a hen?" asked the lady.

"Naw," replied the boy in disgust, "He wouldn't do a cheap imitation like that, he'll eat a woim."